

CASTLE RIVER

INTEGRATED RESOURCE PLAN

financial, income and employment analysis

prepared for:

Alberta Energy and Natural Resources

Resource Planning Branch

EXECUTIVE SUMMARY

The purpose of this analysis was to assess the financial, income and employment impacts of the implementation of the Castle River Integrated Resource Plan. The analysis used the most likely projects which would be undertaken to fulfill the Plan initiatives.

The various plan initiatives related to the agriculture, mineral and forestry resource sectors were found to have little impact on the regional economy and required limited government expenditures. For instance, the range improvements envisioned in the Plan to allow for the accommodation of 1120 additional AUMs will require a provincial expenditure of \$784,000 and generate only 1.4 additional man-years of ranching employment and \$2,240 per year of revenue to the province.

For the analysis, two recreation facility development scenarios were developed. Scenario I assumed that developments were undertaken by the Alberta Forest Service and by Alberta Recreation and Parks. The second Scenario assumed a much lower level of development, generally being undertaken by the Alberta Forest Service. It should be noted that both agencies maintain co-operation in providing recreation opportunities in the Castle sub-region, however, it is important to understand that although both agencies strive to meet demands of both regional and provincial users, there are basic differences in the development standards of their areas and facilities. The Alberta Forest Service attempts to accommodate demands of Albertans who seek a less intense, more "back country" standard of development, while Alberta Recreation & Parks develops facilities suited for a broader range of users. The development associated with the latter necessitates greater diversity, higher standards and subsequently greater capitalization. The demands for such facilities is also much higher, as it is representative of a larger market. In fact, the creation of provincial park areas often creates additional demands. The demands for Alberta Forest Service development are less dramatic and more regional in nature, resulting in a stronger emphasis for local users.

Basically, Scenario 1 required total provincial expenditures of 16.6 million to provide 675 sites of various types and standards and generating 317.1 man-years of employment. Scenario 2 required a total provincial expenditure of 1.5 million to provide 100 sites of generally lower quality and generating 28.6 man-years of employment. Basically, Scenario 1 not only meets proposed demand but in fact will generate a certain amount of demand after development takes place. Scenario 2, on the other hand, simply meets proposed demand as calculated by the Alberta Forest Service (Regional Demand).

The West Castle Ski Area, a regional level alpine facility located in the Castle Valley, is currently being considered for possible expansion. The capability of West Castle to sustain four season resort facilities is under review by the West Castle Development Authority, and although the management intents of the Regional Management Area will accommodate such development, no decision relative to the scope or timing of development has been made, and as a result, different scenarios of impact could not be pursued in this analysis.

The plan provides an interim recreation management direction and once the development at West Castle is built and shifts in demand occur, then impacts can be addressed.

The regional social, income and employment impacts of the various plan initiatives were examined. Generally, many of these impacts occur outside the sub-region in nearby communities of Pincher Creek and the municipality of Crowsnest Pass. As noted above, the primary plan initiative is the development of recreation facilities and the income and employment effects of both of the development scenarios were subsequently determined. For Scenario 1, a maximum of 129 man-years of employment are created in year 2000. The majority of jobs created are related to the construction and operation of the recreation facilities. The total regional income generated

by this scenario is approximately 80.6 million dollars. Scenario 2 generates a maximum of 24.5 jobs in year 2005 and a total regional income of 14.9 million dollars.

The implementation of the Castle River I.R.P. results in only direct provincial expenditures and revenues. The primary expenditures are related to range improvements, administration and research, and recreation operating and capital costs. These expenditures total 51.4 million dollars for Scenario 1 and 4.8 million dollars for Scenario 2. Indirect/Induced expenditures related to the population are generated primarily through employment in recreation facility development and operations and servicing of recreators. Expenditures in this category included education, health, security, infrastructure and transfers. Implementation of the Plan does not appear to generate substantial expenditure in this category as schools, hospitals and infrastructure are presently under-utilized. The primary revenues derived from Plan implementation include recreational user charges (Scenario 1 only), and Grazing Lease/Permit charges for the province. For Scenario 1, approximately 1.8 million dollars would be generated over the 30 year period while Scenario 2 would generate total revenues of \$55,000 over the same period.

In conclusion, implementation of plan initiatives for agriculture, minerals, forestry and Scenario 1 for recreation facility development, provides the greatest number of jobs, the highest total regional income, and the greater number and higher quality of recreational facilities. It also requires the highest expenditures. Implementation of the I.R.P. with all other sectors constant and Scenario 2 for recreation facility development provides sufficient facilities to meet projected demand with lower provincial expenditures, fewer jobs created and reduced total regional incomes.

The following table summarizes the implication of Plan implementation on the various government agencies.

AGENCY	RESOURCE SECTOR	IMPLICATIONS
<u>Energy & Natural Resources</u>		
Alberta Forest Service	Forestry	- negligible impacts
	Recreation	- provide 100 sites to meet projected demand.
		- total capital costs of .87 million dollars.
		- total operating costs of 2.1 million dollars.
		- generates 19.3 man-years of employment.
	Agriculture	- planning, development and administration of range improvement projects.
ENR Fish and Wildlife	Recreation	- undertakes various research projects.
		- total program development costs of \$357,000.
		- provides 9.3 man-years of employment.
ENR Public Lands	Agriculture	- provide range improvement to allow for 1120 additional AUMs.
		- total provincial expenditures of \$784,000.
		- generates total revenues of \$55,000.
		- generates private sector net income of \$27,000 or 1.4 full-time man-years of employment.



AGENCY	RESOURCE SECTOR	IMPLICATIONS
Mineral Resources Division	Recreation	- impact negligible.
<u>Recreation & Parks</u>		- provide 575 additional sites (high quality).
		- provides 278.5 man-years of employment.
		- total capital expenditures of 13.6 million dollars.
		- total operating costs of 31 million dollars.
		- total revenue from recreational user charges is 1.7 million.
<u>Transportation</u>		- impact negligible.
<u>Environment</u>		- impact negligible.
<u>Agriculture</u>		- impact negligible.
<u>Tourism and Small Business</u>		- impact negligible.

Note: The above analysis discounts sales of public lands, and/or any impacts resulting from the proposed West Castle Expansion. Privatization of development was also not considered.

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1.0 INTRODUCTION

1.1 Study Background

The Castle River sub-region is an area of mountains, valleys and foothills located in southwestern Alberta. The Castle River planning area lies immediately north of Waterton Lakes National Park adjacent to the British Columbia - Alberta border (Figure 1.1).

The Castle River sub-region was first given planning consideration in the 1977 Eastern Slopes Regional Plan. The Castle River Sub-Regional Integrated Resource Plan is the mechanism to implement the priorities and objectives presented in the Eastern Slopes Regional Plan. The priorities identified for the Castle River I.R.P. were watershed and recreation management. In 1984 the Eastern Slopes Policy was revised and the priorities expanded to include tourism opportunities and benefits. The revised 1984 Eastern Slopes Policy reflects increased emphasis on Private Sector participation in the development of recreation opportunities.

Through detailed analysis of 5 resource management areas (RMA's), the management intents express the resource priorities for each area as denoted by the refined eastern slopes zoning.

The eventual implementation of the Plan or its components will effect the local and regional economy. Therefore, before a decision to proceed is made, it is necessary to assess the various management intents from an economic perspective. Specifically, there is a need to know what levels of income and employment will be generated and/or lost as a result of plan implementation. It is also important to understand the financial implications affecting various levels of government.

The financial, income and employment analysis of the Castle River I.R.P. is similar to the analyses completed by Stewart, Weir & Co. on three earlier

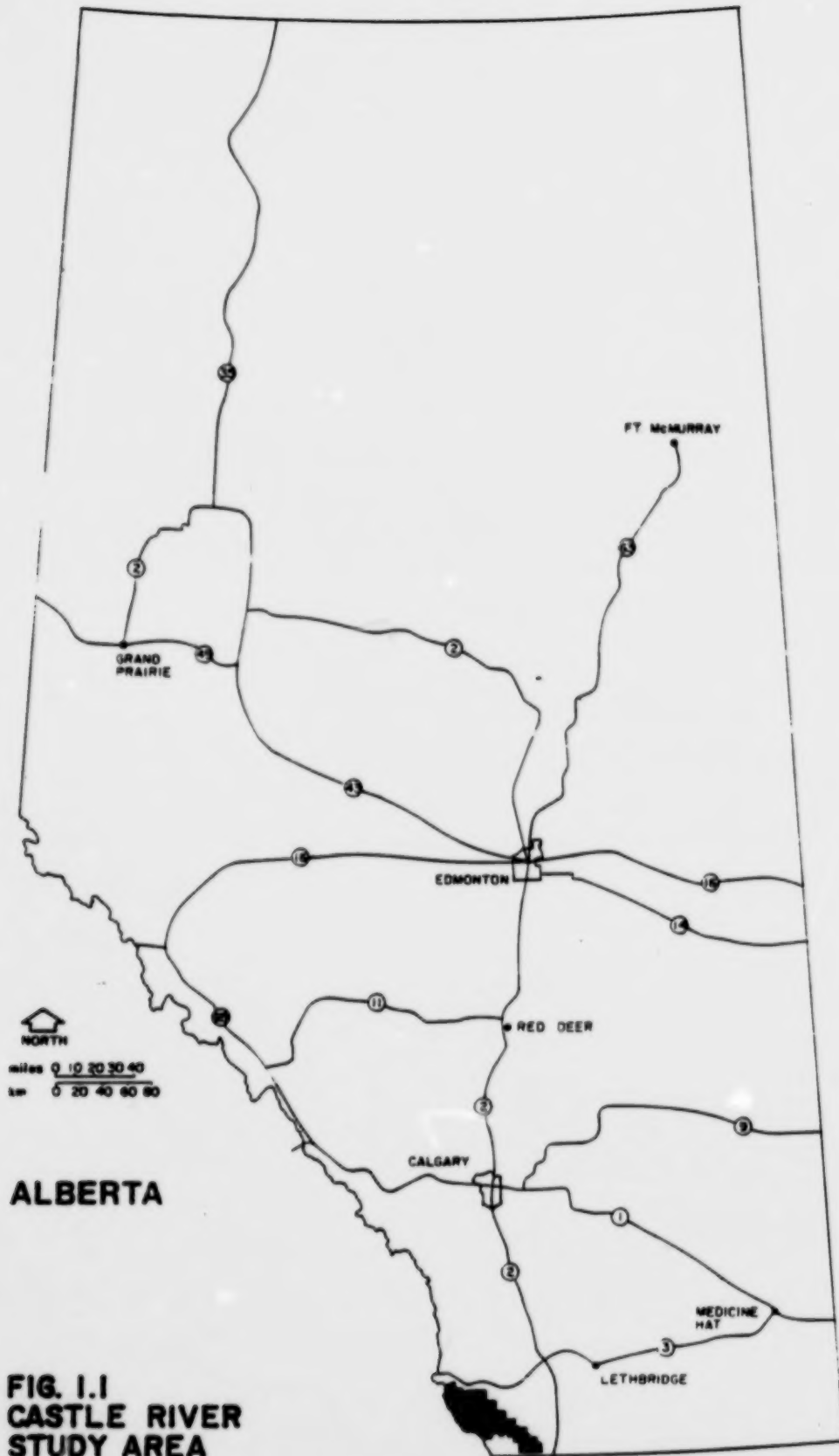


**FIG. 1.1
CASTLE RIVER
STUDY AREA**

studies; the Lakeland, the Big Bend, and the Jean d'Or Prairie Integrated Resource Plans.

1.2 Study Design

The purpose of this study is to assess the financial, income and employment effects of the resource management initiatives suggested by the draft Castle River I.R.P.

Unlike the previous analyses, this study does not examine alternative implementation scenarios of the plan, rather, the implications of implementing the specific management actions in the plan are analysed. One exception however, has been made with respect to alternative recreation opportunities. Two alternative recreation development scenarios are analysed. The first is based upon the Alberta Forest Service continuing to supply the same type and level of recreation facilities throughout the study period, as well as a number of Alberta Recreation and Parks developments. The second scenario is based upon planned involvement of the Alberta Forest Service without future involvement by Alberta Recreation and Parks.

The basis for analysis throughout the study was an examination of the most likely projects which would be undertaken to fulfill plan initiatives. In this regard, the reader should be made aware that although these projects are likely occurrences, they may be undertaken to varying degrees, or not at all, due to budgetary limitations and priorities. Regardless, the analysis does indicate the nature and probable magnitude of plan implementation impacts.

The study provides a measure of the employment and income opportunities which will be generated or foregone as a result of the Plan.

The study also examines the financial implementation of the plan in terms of significant revenues and expenditures for the provincial and municipal levels of government.

The Plan will have its most significant impact on the income and employment generated by increased recreation and tourism development. The first major objective of the study is to determine the income and employment that would result directly from implementation of the Plan.

Employment and income changes effected by increased recreation and tourism development will also have economic ramifications in other sectors of the economy. Again, the "spin-offs" will be effected by the nature of the development. The second major objective then, is to determine income and employment effects that would be generated indirectly in other sectors of the economy as a result of the Plan.

Once the broad impact of the Plan is identified in terms of employment, income and population, it is possible to identify the expenditures and revenues associated with each level of government. The third objective will be to determine the major provincial and municipal government revenues and expenditures associated with the Plan.

A fourth study objective in analysing the Plan developments will be to present all income and employment impact data in terms of both gross and net figures.

A final objective of the study is to clearly state the assumptions on which it is based. This is important in that it will provide a consistent method of analysis which can be utilized in studies of other Integrated Resource Plans done in the Province. Explicit methodology will also permit government planners and decision makers to update the study on the basis of changed conditions and/or assumptions.

In summary, the objectives of the study are:

1. To determine income and employment that would result directly from implementation of specific management actions in the plan.

2. To determine income and employment effects that would be generated indirectly in other sectors of the economy as a result of implementing specific management actions in the Plan.
3. To determine overall provincial and municipal government revenues and expenditures that would be associated with implementing specific management actions in the Plan.
4. To present information concerning gross and net financial, income and employment impacts associated with implementing specific management actions in the Plan.
5. To collect and analyse all information using accepted and documented methodologies for the purpose of enabling comparison with similar studies in other planning areas.

In pursuing these objectives, the ultimate goal is to provide information which will assist decision making.

1.3 Major Plan Initiatives

The I.R.P. articulates a comprehensive management policy for crown lands and resources within the sub-regional planning area. Management guidelines and objectives provide fundamental direction for a variety of activities. As well, the I.R.P. suggests broad physical allocation of land areas. The Plan not only identifies a management policy, it also indicates a desirable pattern of land use.

The overall management objectives of the Plan are to preserve critical watershed areas and to support controlled recreation and tourism development. The Plan identifies 5 Resource Management Areas (RMAs), each with specific management intents which express resource priorities for the area. Two RMAs emphasize recreation opportunities, the others multiple use, protection of critical wildlife habitat and forage resource management.

As noted in the previous section, the analysis will not compare alternative implementation scenarios, rather, the specific management actions cited in the Plan will be analysed. The tasks, manpower and budget requirements for each management action will be specified by the responsible government agency.

1.4 Organization of the Report

The remainder of the report is organized into a number of fundamental components, reflecting the basic study objectives.

The first few sections of the report, Chapters 2 through 5, examine the probable effects of plan implementation on individual resource sectors. The sectoral analysis considers the nature and possible magnitude of income and employment effects on particular resource activities (eg., agriculture, minerals), which might be anticipated as a result of overall Plan initiatives. The general implications are summarized at the end of each chapter. The detailed sectoral investigation provided much of the basic input for the remaining analysis.

Chapter 6 examines the overall regional impact of the Plan on the local economy. Employment and income multipliers are used to predict direct and indirect effects over a 30 year period.

The financial implications for Provincial and Municipal governments are evaluated in Chapter 7. The major revenues and expenditures associated with the Plan initiatives have been identified, and streamed over a 30 year period to obtain total amounts and discounted (present value) figures. The fiscal review may not be entirely comprehensive, yet by evaluating the major impacts in a consistent manner the relative financial merits of the implement scenario can be assessed.

The final chapter summarizes the major conclusions of the preceeding analysis. Basic research findings are synthesized in this chapter which may offer the reader adequate information on results of the study. However, anyone seeking more detailed information should examine the appropriate sections of the report. In most cases any necessary assumptions and relevant methodology are outlined within the footnotes of each chapter.

2.0 WILDLIFE, FISHERIES, RECREATION AND TOURISM

2.1 Introduction

This Chapter of the report deals with four major interrelated land uses in the Castle River area: wildlife, fisheries, recreation and tourism. Wildlife are subject to commercial uses (trapping), and both wildlife and fisheries are subject to non-commercial uses (recreational hunting, fishing and non-consumptive uses). These same resources are an integral part of the natural environment of the area within which recreation and tourism take place.

Each resource use category is examined in terms of current utilization and projected utilization. In particular, use rates and associated expenditures and employment rates are estimated and presented. At present consumptive fish and wildlife uses (fishing, hunting, and trapping) are essentially at capacity. Recreation fish and wildlife harvest rates are expected to remain steady over time provided maintenance objectives outlined in the Castle River I.R.P. are met. Recreation and tourism activity levels are expected to grow at modest rates over the next thirty years. Trapping may decline, hunting activity is expected to increase slightly over the next five years then level off, and fishing activity will increase over the next 15 years and then level off (Table 2.1).

For the assessment of recreation and tourism activities, two scenarios were developed. Scenario 1 includes all proposed Alberta Forest Service projects, as well as all Alberta Recreation and Parks projects (see Appendix 1A). Scenario 2 assumes that only the Alberta Forest Service projects are undertaken. The impact of the development upon visitation rates, employment and income is traced. The analysis of the two scenarios will identify the financial, income and employment consequences of a large and small capital development program. The levels of development identified in each scenario serve to point out notable differences of each cooperating agency. The Alberta Forest Services attempts to meet the demands of a local or regional

Table 2.1
Current and Projected Annual Visitor Days
in the Castle River Area, 1985-2015

Activity	1985	1990	1995	2000	2005	2010	2015
Fishing ¹							
- Licenced	97,190	105,750	115,070	125,180	125,180	125,180	125,180
- Unlicenced	41,900	45,590	49,610	53,970	53,970	53,970	53,970
Subtotal	139,090	151,340	164,680	179,150	179,150	179,150	179,150
Hunting ²	15,865	17,260	17,300	17,300	17,300	17,300	17,300
Other (Scenario 1) ³	68,435	74,460	81,030	89,460	98,770	109,050	120,410
Scenario 1 Total Visitor Days ⁴	223,390	243,060	263,010	285,910	295,220	305,500	316,860
Other (Scenario 2) ⁵	68,435	74,460	81,030	81,030	81,030	81,030	81,030
Scenario 2 Total Visitor Days ⁶	223,390	243,060	263,010	277,480	277,480	277,480	277,480

¹ Assumes a 1.7 percent per year growth rate to the year 2000 and constant thereafter (not affected by facility development).

² Assumes a 1.7 percent per year growth rate to the year 1990 and constant thereafter (not affected by facility development).

³ For Scenario 1, the "Other" visitor days are derived by assuming a 1.7 percent per year growth rate until 1995 and a 2.0 percent per year growth rate thereafter. Due to the limitations in expanded hunting and fishing activities, substitution of other recreation activities are expected to take place.

⁴ Total visitor days for Fishing, Hunting and Other derived from Scenario 1.

⁵ For Scenario 2, the "Other" visitor days are derived by assuming a 1.7 percent per year growth rate until 1995 and constant thereafter.

⁶ Total visitor days for Fishing, Hunting and Other derived from Scenario 2.

user through the provision of basic facilities, while Alberta Recreation & Parks attempts to meet more diverse regional and provincial level demands through high standard and often larger scale developments.

For the purposes of the analysis, the agencies involved in the delivery of recreation facilities provided a series of proposed facility developments and an associated estimate of costs. As previously noted, these projects are deemed necessary for the successful implementation of the Plan. However, project specifications may vary when and if the specific projects are undertaken. Furthermore, all projects are subject to the standard budgetary approval process and the proposed projects may not be developed due to changing priorities.

2.2 Fisheries

Sport fishing is the single largest recreation activity in the area, accounting for an estimated 139,090 angler days out of 223,390 recreation days in the area during 1985 (Table 2.1)¹. Among total angler days, 96,200 are accounted for by licensed resident anglers and 990 are accounted for by licensed non-resident anglers (Table 2.2). The remainder consist of angler days by anglers below 16 years of age and above 65 years of age who require no license.

The average resident angler spends \$38.87 per day in the region while the average non-resident angler spends \$83.20 per day.² Expenditure profiles for licensed anglers indicate current total annual expenditures in the region to be \$3,821,650 (Table 2.2). Most of this total goes to travel cost and food (Table 2.3). No comparable information was available for unlicensed anglers. Therefore, these expenditures are excluded from the analysis.

Direct economic benefits are measured by estimating the angler's willingness to pay, over and above expenditures, for a day of angler activity. There are several methods of determining willingness to pay but probably the best



method is the direct survey method.³ The average willingness to pay for resident anglers is \$29.40 per day and the average for non-resident anglers is \$40.70 per day.⁴ Thus the total direct economic annual benefit of consumptive recreation fishery use is \$2,868,600 (Table 2.4).

Table 2.2
Current Recreation Activity Days and Expenditures
in the Castle River Area

<u>Item</u>	<u>Annual Activity Days</u>	<u>Exp./Day</u>	<u>Annual Total Expenditures</u>
- 1985 Dollars -			
Resident Fishing	96,200	\$38.87	\$ 3,739,300
Non-resident Fishing	990	\$83.20	82,350
Resident Hunting	15,240	\$34.31	522,880
Non-resident Hunting	625	\$94.17	58,860
Other Recreation	68,435	\$15.75	1,077,850
TOTAL	181,490		\$ 5,481,240

Table 2.3
Current Expenditures by Component
in the Castle River Area
(1985 Dollars)

<u>Item</u>	<u>Resident Fishing</u>	<u>Non-Resident Fishing</u>	<u>Resident Hunting</u>	<u>Non-Resident Hunting</u>	<u>Non- Consumptive</u>
Travel Cost	\$ 987,950	\$ 27,000	\$ 131,060	\$ 9,495	\$ 360,725
Lodging	379,980	13,875	68,430	8,370	
Food	1,402,610	26,500	178,610	13,285	717,125
Beverages	499,290	7,885	66,446	5,020	
Guides	0	0	0	13,588	0
Other	469,470	7,090	78,334	9,112	0
Total	\$ 3,739,300	\$ 82,350	\$ 522,880	\$ 58,860	\$ 1,077,850

Table 2.4
Current Extra Market Benefits for
Hunting and Fishing Activity in the Castle River Area

<u>Item</u>	<u>Annual Activity Days</u>	<u>Extra Market Benefits/Day</u>	<u>Total Annual Extra Market Benefits</u>
- 1985 dollars -			
Resident Fishing	96,200	\$ 29.40	\$ 2,828,300
Non-Resident Fishing	990	\$ 40.70	\$ 40,300
Resident Hunting	15,240	\$ 48.45	\$ 738,400
Non-Resident Hunting	625	\$ 92.11	\$ 57,570

Recreational fish harvest in the Castle River area will only increase slightly in the future, relative to current harvests. Fishing activity in terms of angler days will, however, continue to grow during the next decade and then gradually level off by the year 2000 at an estimated level of slightly over 179,000 angler days per year (Table 2.1). Annual expenditures in 1985 dollars are expected to increase from about \$3,822,000 in 1985 to about \$4,922,000 by the year 2000 and level off thereafter (Table 2.5).

2.3 Wildlife

The most important wildlife species for hunting in the Castle River area are elk, mule deer and white tail deer. Other big game species hunted to a lesser extent include big horn sheep, moose and grizzly bear. Upland game and waterfowl hunting is quite minor.

Data from a province-wide survey of hunting activity pertaining to hunters active in the Castle River area along with information provided by the Lethbridge regional office of the Alberta Fish and Wildlife Division were utilized to estimate regional hunter days and activities.⁵ The estimated current annual number of hunting days in the area is 15,240 for resident hunters and 625 for non-resident hunters, giving a total of 15,865 hunter days (Tables 2.1 and 2.2).⁶ The average resident hunter spends \$34.31 per day and the average non-resident hunter spends \$94.17 per day in the region. Current total expenditures amount to \$581,740 annually (Tables 2.2 and 2.3). Travel costs and food costs account for most of the total (Table 2.3).

Direct economic benefits are measured by estimating the hunter's willingness to pay, over and above expenditures, for a day of hunting. Utilizing the technique discussed in the fisheries section, the estimated willingness to pay for resident hunters is \$48.45 per day and for non-resident hunters \$92.11 per day. Current total annual net benefits are \$795,970 (Table 2.4).

There is little, or no potential for increased big game harvest in the area although this potential is expected to be maintained into the future

Table 2.5
Current and Projected Annual Total Visitor Expenditure Levels
Castle River Area (1985 Dollars)

Year	Fishing		Hunting		Scenario 1 Other Activities		Scenario 2 Other Activities		Total ²
	Resident	Non-Resident	Resident	Non-Resident	Resident	Total ¹	Resident	Total ¹	
1985	3,739,300	82,350	522,880	58,860	1,077,850	5,481,240	1,077,850	1,077,850	5,481,240
1990	4,068,360	89,600	568,890	64,040	1,172,745	5,963,635	1,172,745	1,172,745	5,963,635
1995	4,427,330	97,500	569,550	65,920	1,276,220	6,436,520	1,276,220	1,276,220	6,436,520
2000	4,816,220	106,070	569,550	65,920	1,408,995	6,966,755	1,276,220	1,276,220	6,833,980
2005	4,816,220	106,070	569,550	65,920	1,555,630	7,113,390	1,276,220	1,276,220	6,833,980
2010	4,816,220	106,070	569,550	65,920	1,717,540	7,275,300	1,276,220	1,276,220	6,833,980
2015	4,816,220	106,070	569,559	65,920	1,896,460	7,454,220	1,276,220	1,276,220	6,833,980

1 Total Includes Fishing, Hunting and Scenario 1 Other.

2 Total Includes Fishing, Hunting and Scenario 2 Other.

in accordance with the objectives of the Castle River I.R.P. Annual hunter days are expected to grow slightly during the next five years at 1.7 percent per year and then level off at 17,300 hunter days per year (Table 2.1). Local expenditures commensurate with hunter days are expected to increase from \$581,740 per year to \$635,470 per year by 1995.

The Castle River area supports all or part of seven registered traplines. The current annual total income is about \$10,000. This figure is the sum of each trapline income times the proportion (percent) of its area within the study area boundaries. Trapline income statistics are not public information, therefore only aggregate statistics are presented. Increased recreational activity, mining and forestry will displace some trapping activity and income, particularly in RMA's A and C. The extent of displacement is not estimated but is assumed to be minor for purposes of this report and within the context of the Castle River I.R.P.

2.4 Fish and Wildlife Administrative and Research Costs

Government administration of fish and wildlife costs rests largely with the provincial government and includes both headquarters and regional staff time. At present, annual administration costs for the Castle River area are estimated at \$64,485 of which \$48,900 are for salaries for 1.4 man years.⁷ These costs are assumed to remain constant over the next 30 years.

In order to maintain or enhance fish and wildlife habitat and populations a number of projects involving expenditures and employment beyond administrative costs are expected. Six of the following projects are considered high priority and are assumed to be implemented by 1990:

- Livestock - wild ungulate competition assessment;
- Mountain goat population and range study;
- Access evaluation study;
- Habitat development opportunities and priorities determination;



Update of fisheries inventories; and
Assessment of fish populations and angler harvest of selected lakes.

These projects are expected to provide approximately eight man years of employment and expenditures of \$311,000 of which about \$200,000 represents wages and salaries. Two additional lower priority projects are expected to be implemented during the 1991-95 period. These projects are:

Assessment of high mountain lakes for trout introductions; and
Furbearer inventory and habitat delineation.

These projects are expected to provide one man year of employment and expenditures of \$46,200 (1985 dollars) of which about \$30,000 are for wages and salaries.

2.5 Recreation and Tourism Activities

The Castle River area provides a variety of outdoor recreation opportunities of which fishing, as indicated earlier, is the most dominant activity. Other activities include camping, hiking, climbing, boating, snowmobiling, sight-seeing, touring, and so on. In addition to annual angler days of 139,090 and hunter days of 15,865, there are an estimated 68,435 additional recreations days⁸, bringing the total recreation days to 223,390 annually (Table 2.1).

Local expenditures for activities other than hunting and fishing in 1985 dollars are estimated to average \$15.75 per recreation day of which \$5.31 are for travel and \$10.44 are for food and lodging.⁹ Current total annual local expenditures amount to \$1,077,850 of which \$360,725 are for travel and \$717,125 are for food and lodging (Tables 2.2 and 2.3). Most of these expenditures, as well as those for hunting and fishing, take place in the larger centres, notably Pincher Creek and Blairmore, in close proximity to the Castle River area.

The growth in recreation and tourism activities is related to facility development. Therefore, the growth rate for the two scenarios will vary. For Scenario 1, the expected growth rate in recreation and tourism activities (excepting fishing and hunting) in the area is 1.7 percent per year¹⁰ until 1995 and 2.0 percent thereafter. Recreation days will increase from 68,435 per year to 120,410 per year by 2015 (Table 2.1). Annual recreation expenditures (1985 dollars) are projected to grow at the same rates as recreation days. Thus, annual expenditures will grow from \$1,077,850 in 1985 to \$1,896,460 by 2015. When combined with fishing and hunting, local annual expenditures for all types of recreation and tourism are expected to grow from \$5,481,240 in 1985 to \$7,454,220 in 2015 (Table 2.5).

For Scenario 2, the expected growth rate in recreation and tourism activities (other) is 1.7 percent per year until 1995 and constant thereafter. Recreation days will increase from 64,435 to 81,030 in 1995 (Table 2.1). Annual expenditures will grow from \$1,077,850 in 1985 to \$1,276,220 by 1995. Total annual expenditures for all types of activities (i.e. fishing, hunting and other) are expected to grow from \$5,481,240 to \$6,833,980 in 1995 (Table 2.5).

2.6 Recreation and Tourism Facilities

The Castle River area at present contains 349 units of auto access camping operated by the Alberta Forest Service (AFS) and Alberta Recreation and Parks (R&P). There are, in addition, 30 units in two group camps and 12 remote campsites, there are 209 day use units operated by both agencies in eight locations in the area (Table 2.6). Present facilities are used well beyond capacity during peak visitation periods. As a result, a significant amount of random camping takes place, usually in close proximity to existing campgrounds. The operation of current facilities utilize 8.3 man years of employment involving an annual wage/salary total of \$206,000¹¹. All facilities are government funded and operated with an annual cost, including labour and other items, amounting to \$437,735. Revenue of 15,500/yr. is presently received from Beauvais Lake Provincial Park.

Table 2.6
Recreation Facilities by Capacity and Location by 2015
Castle River Area - Scenario 1

Location ¹	1985		1995		2000	
	Auto Access Campsites	Day Use Sites	Auto Access Campsites	Day Use Sites	Auto Access Campsites	Day Use Sites
Beauvais Lake Provincial Park (R&P)	85	49	85	49	135	49
Beaverdam-Paine Provincial Park (R&P)	-	-	-	-	125	60
South Castle Provincial Park (R&P)	-	-	250	90	250	90
Castle River Provincial Recreation Area (R&P) ²	25	3	25	3	25	3
Yarrow Creek Provincial Recreation Area (R&P) ³	8	-	8	-	8	-
Beaver Mines Lake (AFS) ⁴	122	14	122	14	122	14
Castle Falls (AFS)	49	18	49	18	49	18
Castle River Bridge (AFS)	30	10	30	10	30	10
Lynx Creek (AFS)	30	15	30	15	30	15
Syncline Cross-Country Ski Area (AFS)	-	50	-	50	-	50
Beaver Mines Lake Overflow (AFS)	-	50	-	50	-	50
West Castle (RMAC) (AFS)	-	-	50	-	100	-
TOTAL ⁵	349	209	649	299	874	359

Table 2.6
Recreation Facilities by Capacity and Location by 2015
Castle River Area - Scenario 1

(Continued)

- ¹ Alberta Recreation and Parks (R&P) and Alberta Forest Service (AFS).
- ² The estimated number of sites provided by D. Perraton from R&P.
- ³ The estimated number of sites provided by D. Perraton from R&P.
- ⁴ Facilities to be upgraded to R&P standards and administered by the Department in 1995.
- ⁵ There are also Syncline Group Camps A and B (AFS) with a total of 30 group campsites and 12 remote campsites which are expected to remain unchanged in capacity through 2015. By the mid-1990's South Castle Provincial Park (R&P) is expected to have 50 group and 29 remote campsites and by the end of the century Beaverdam-Paine Provincial Park is expected to have 20 group and 10 remote campsites and Beauvais Lake Provincial Park, 40 group and 20 remote campsites.



For Scenario 1, recreation facilities are expected to increase significantly by the year 2000. Campsites will more than double, while day use sites will nearly double current capacity (Table 2.6). Upgrading of existing facilities along with trail and other associated facility developments will also take place. While facility development will increase faster than projected visitations, the latter will continue to exceed capacity during peak periods unless further development after the year 2000 takes place¹².

Although our visitor day projections ensure that facilities are used to capacity (224 visitor days per site per year, Footnote 12), the projections in this report are considered by Alberta Parks & Recreation to be conservative.

Development costs of proposed facilities between 1990 and 2005 will total over 16 million dollars (1985 dollars) most of which will take place in the mid-1990's. These expenditures will generate a total of 307.8 man years of employment and \$8,784,732 of wages and salaries. Inclusion of program development will increase the totals to 317.1 man years, and \$9,020,732 of wages and salaries, as well as an additional \$397,200 to total government expenditures.

Annual operating costs will increase as new developments come on stream. Annual man years of employment will increase from 16.4 in 1985 to 80.9 by 2005. Similarly annual wages and salaries will increase from \$319,547 to \$1,578,837 (1985 dollars) over the same period (Table 2.7). Annual government expenditures will increase from \$437,735 in 1985 to \$2,162,791 by 2005 and remain constant thereafter unless new developments take place.

Government revenues will be derived from Alberta Parks and Recreation facilities after construction. Estimated revenues of \$15,500 are presently generated from annual user fees from Beauvais Lake Provincial Park. With the additional sites developed after 1995, the estimated revenues increased to \$90,500. Increased facility development in the late 1990's provides additional revenues. Thus, from year 2000 approximately \$138,750 is expected per year (Table 2.7).

For Scenario 2, which does not include major Recreation and Parks facility development, the financial, income and employment projections are greatly reduced.

Table 2.7
Scenario 1 (With Parks and Recreation)
Financial, Income, Employment and Visitor Day Projections

	<u>1985*</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>
<u>Incremental Recreation Activity</u>							
Angler Days	139,090	151,340	164,680	179,150	179,150	179,150	179,150
Hunter Days	15,865	17,260	17,300	17,300	17,300	17,300	17,300
Other Rec. Days	<u>68,435</u>	<u>74,460</u>	<u>81,030</u>	<u>89,460</u>	<u>98,770</u>	<u>109,050</u>	<u>120,410</u>
Total Visitor Days	223,390	243,060	263,010	285,910	295,220	305,500	316,860
<u>Incremental Facility Development¹</u>							
Employment ⁴ (man years)		7.7 ⁹	182.3	111.5	6.3		
Wages/Salaries ⁵ (1985 \$)	-	198,018	5,442,888	3,023,488	120,338	-	-
Other (1985 \$)	-	<u>174,332</u>	<u>4,592,362</u>	<u>2,573,762</u>	<u>148,912</u>	-	-
Government Expenditure (1985 \$)	-	372,350	10,035,250	5,597,250	269,250	-	-
<u>Incremental Program Development²</u>							
Employment (man years)	-	8.3	1.0	-	-	-	-
Wages/Salaries (1985 \$)	-	206,000	30,000	-	-	-	-
Other (1985 \$)	-	<u>145,000</u>	<u>16,200</u>	-	-	-	-
Government Expenditure (1985 \$)	-	351,000	46,200				
<u>Incremental Annual Operations³</u>							
Employment ⁸ (man years)	16.4	17.9	57.7	79.9	80.9	80.9	80.9
Annual Wages/Salaries (1985 \$)	<u>319,547</u>	<u>348,359</u>	<u>1,124,887</u>	<u>1,558,002</u>	<u>1,578,837</u>	<u>1,578,837</u>	<u>1,578,837</u>
Annual Government Expenditure (1985 \$)	437,735	477,204	1,540,941	2,134,250	2,162,791	2,162,791	2,162,791
<u>Incremental Government Revenue¹⁰</u>	15,500 ¹¹	15,500	15,500	90,500 ¹²	138,750 ¹³	138,750	138,750

*Existing non-incremental.

Footnotes for Table 2.7

1. Includes Alberta Forest Service and Alberta Parks and Recreation projects (see Appendix 1A).
2. Includes Alberta Fish and Wildlife and Alberta Forest Service projects (see Appendix 1A).
3. Includes Alberta Fish and Wildlife, Alberta Forest Services and Alberta Parks and Recreation projects (see Appendix 1A). Figures cumulative.
4. Employment figures include those supplied for particular programs on Project Implementation Worksheets and those generated for programs with no employment splits. These figures were generated by assuming \$30,000 per job.
5. Wage figures include those supplied for particular programs on Project Implementation Worksheets and those generated for programs with no wage splits. These figures were generated by assuming wages were 55% of total program costs.
6. Annual government expense is assumed to be 10.6% of total facility development cost.
7. Wages are assumed to be 73% of total government operating expenditures.
8. Employment figures were generated by assuming 1 job = \$19,500.
9. Includes .77 man year of private sector contract employment.

10. Government revenues calculated for provincial park campsite fees only. Licence fees not included. Present user fees for camping sites are as follows:

- (a) \$3 for basic sites;
- (b) \$4 for semi-serviced sites;
- (c) \$5 for fully serviced sites.

For the purposes of this analysis, it is assumed that the user fee is \$3 except for Beauvais Lake, where revenues are \$15,500/year. Therefore, total revenue will be underestimated. Site usage is calculated by projecting visitation levels, then assuming 3.2 persons/campsite. Day use is assumed to continue to have no charge.

11. Includes fees charged at Beauvais Lake Provincial Park.
12. Includes fees charged at Beauvais Lake, Beaver Mines Lake and South Castle Provincial Parks.
13. Includes fees charged at Beaver Mines Lake, South Castle, Beaverdam-Paine and Beauvais Lake Provincial Parks (Castle River and Yarrow Creek Reservation Areas proposed fees not included).

Recreation facilities are increased, with an additional 100 sites for auto access (Table 2.8).

The projected visitations increase until 1995 and then level off. Projected visitations would continue to exceed capacity during peak periods through the entire period.

Development costs between 1990 and 2005 for this scenario will total \$1,093,100 (1985 dollars) and program costs would add an additional \$397,200 to total government recreation expenditures (Table 2.9).

Employment generated from facility development totals 19.3 man years with a total for wages and salaries of \$435,180. Program development provides 9.3 man years of employment with wages and salaries of \$236,000.

Annual operating employment increases due to facility development from a current total of 16.4 man year/year to a total of 20.7 man year/year by 2000 and beyond. Annual operating expenditures increase from \$437,735 currently, to \$553,604 by 2005.

Government revenue will continue to be generated from Beauvais Lake Provincial Park, as this scenario does not include provincial park development.

For both scenarios, most of the development costs will be privatized except a portion of planning and design costs. The expected amount of Private Sector involvement in annual operations is less clear. Many of the maintenance tasks associated with building and grounds maintenance could be contracted to private interests. Concession services could also be privatized. The possibility of private sector operation of campgrounds also exists, especially in light of a proposed West Castle expansion plan which, if undertaken, may provide increased tourism opportunities in the West Castle Valley Area. The impacts of private initiatives are not addressed in this current report, since the feasibility for increased expansion of the West Castle Ski Area has yet to be determined.

Table 2.8
Recreation Facilities by Capacity and Location by 2015
Castle River Area - Scenario 2

Location ¹	1985		1995		2000	
	Auto Access	Day Use	Auto Access	Day Use	Auto Access	Day Use
	Campsites	Sites	Campsites	Sites	Campsites	Sites
Beauvais Lake Provincial Park (R&P)	85	49	85	49	85	49
Castle River Provincial Recreation Area (R&P) ²	25	3	25	3	25	3
Yarrow Creek Provincial Recreation Area (R&P) ³	8	-	8	-	8	-
Beaver Mines Lake (AFS)	122	14	122	14	122	14
Castle Falls (AFS)	49	18	49	18	49	18
Castle River Bridge (AFS)	30	10	30	10	30	10
Lynx Creek (AFS)	30	15	30	15	30	15
Syncline Cross-Country Ski Area (AFS)	-	50	-	50	-	50
Beaver Mines Lake Overflow (AFS)	-	50	-	50	-	50
West Castle (RMAC) (AFS)	-	-	50	-	100	-
TOTAL ⁴	349	209	399	209	449	209

¹ Alberta Recreation and Parks (R&P) and Alberta Forest Services (AFS).

² The estimated number of sites provided by D. Perraton from R&P.

³ The estimated number of sites provided by D. Perraton from R&P.

⁴ There are also Syncline Group Camps A and B (AFS) with a total of 30 group campsites and 12 remote campsites which are expected to remain unchanged in capacity through 2015.

Table 2.9
Scenario 2 (Without Parks and Recreation)
Financial, Income, Employment and Visitor Day Projections

	<u>1985*</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>
<u>Incremental Recreation Activity</u>							
Angler Days	139,090	151,340	164,680	179,150	179,150	179,150	179,150
Hunter Days	15,865	17,260	17,300	17,300	17,300	17,300	17,300
Other Rec. Days	<u>68,435</u>	<u>74,460</u>	<u>81,030</u>	<u>81,030</u>	<u>81,030</u>	<u>81,030</u>	<u>81,030</u>
Total Visitor Days	223,350	243,060	263,010	277,480	277,480	277,480	277,480
<u>Incremental Facility Development¹</u>							
Employment ⁴ (man years)		6.0 ⁹	3.3	4.5	5.5	-	-
Wages/Salaries ⁵ (1985 \$)	-	146,180	83,000	110,000	96,000	-	-
Other (1985 \$)	-	<u>131,920</u>	<u>207,000</u>	<u>190,000</u>	<u>129,000</u>	-	-
Government Expenditure (1985 \$)	-	278,100	290,000	300,000	225,000	-	-
<u>Incremental Program Development²</u>							
Employment (man years)	-	8.3	1	-	-	-	-
Wages/Salaries (1985 \$)	-	206,000	30,000	-	-	-	-
Other (1985 \$)	-	<u>145,000</u>	<u>16,200</u>	-	-	-	-
Government Expenditure (1985 \$)	-	351,000	46,200				
<u>Incremental Annual Operations³</u>							
Employment ⁸ (man years)	16.4	17.5	18.6	19.8	20.7	20.7	20.7
Annual Wages/Salaries ⁷ (1985 \$)	<u>319,547</u>	<u>341,066</u>	<u>363,506</u>	<u>386,720</u>	<u>404,131</u>	<u>404,131</u>	<u>404,131</u>
Annual Government Expenditure (1985 \$) ⁶	437,735	467,214	497,954	529,754	553,604	553,604	553,604
Government Revenue ¹⁰	15,500	15,500	15,500	15,500	15,500	15,500	15,500

*Existing non-incremental

Footnotes for Table 2.9

1. Includes Alberta Forest Service projects only (see Appendix 1A).
2. Includes Alberta Fish and Wildlife and Alberta Forest Service projects (see Appendix 1A).
3. Includes Alberta Fish and Wildlife and Alberta Forest Service projects. Figures cumulative.
4. Employment figures are as denoted on Project Implementation Worksheets also includes employment from contracted projects (assumes \$30,000 per job).
5. Wage figures are as denoted on Project Implementation Worksheets also includes wages figures assumed to be 55% of total contract price.
6. Annual government expense is as specified by program agencies.
7. Wages assumed to be 73% of total government operating expenditures.
8. Employment figures were generated by assuming 1 job = \$19,500.
9. Includes .77 man year of private sector contract employment.
10. Revenue generated from Beauvais Lake Provincial Park.

2.7 Summary

At present there are 223,390 recreation days spent in the Castle River area which results in an annual local first-round expenditure of 5.5 million dollars. Consumptive fish utilization is at or near capacity. Angler harvests are expected to remain essentially constant over time, although the number of angler days is expected to grow until 2000 and remain constant thereafter. Angler success rates will however decline. Recreation and other resource use expansion will cause trapping activity to decline. Sport hunting activity days will increase slightly to 1990 and level off. For Scenario 1, recreation activity other than hunting and fishing is expected to grow at 1.7 percent per year until 1995 and 2.0 percent per year thereafter. Total recreation days including hunting and fishing will increase from 223,390 visitor days in 1985 to 316,860 by 2015. Local annual recreationists' expenditures will increase from 5.5 million dollars in 1985 to 7.5 million dollars by 2015.

Recreation facility developments include camping and day use facilities, which will more than double by the year 2000, as well as trails and other associated developments. For Scenario 1, facility and program developments between 1990 and 2005 will result in a total of 317.1 man years of employment earning 9.0 million dollars. Annual operations including fish and wildlife management, will increase from 16.4 man years per year in 1985 to 80.9 man years per year by 2005. Commensurate annual income will increase from 0.3 to 1.5 million dollars. Trapping employment and income losses are reflected in these changes. Annual government expenditures including fish and wildlife administration costs will increase from 0.4 million dollars in 1985 to 2.2 million dollars by 2005.

For Scenario 2, recreation activity other than hunting and fishing is expected to grow at 1.7 percent per year until 1995 and remain constant thereafter. Total recreation days will increase from 223,390 in 1985 to 277,480 by 2000. Local annual recreationists' expenditure increases modestly from 5.5 million dollars in 1985 to 6.8 million dollars by 2000.

Limited recreation facility development is anticipated. Facility and program developments between 1990 and 2005 will result in 28.6 man years of employment, earning approximately 0.7 million dollars.

Limited growth in annual operating expenditures and employment is expected with employment increasing from 16.4 man year per year to 20.7 by 2005. Annual income will increase by \$100,000 per year during the period 1985 - 2005 to a maximum of 0.4 million.

Footnotes to Chapter 2

- 1 Phillips, W.E., D. DePape and L. Ewanyk. A Socio-Economic Evaluation of Fish and Wildlife Resources in Alberta with Particular Reference to the AOSERP Study Area. AOSERP Report No. 43, Edmonton, Alberta. Additional information on angler numbers were provided from the Lethbridge Regional Office of the Alberta Fish and Wildlife Division.
- 2 Phillips, et al. Ibid.
- 3 Adamowicz, W.L. and W.E. Phillips. "A Comparison of Extra Market Benefit Evaluation Techniques", Canadian Journal of Agricultural Economics 31 (November, 1983): 401-412.
- 4 These figures represent direct extra market benefits. There is a market component of direct benefits, namely licence Secs., which are transferred from the angler to the provincial government. This component is very small in relation to the extra market component and was not included in direct benefit estimates. The figures presented in this report are based upon direct survey results reported in Phillips, et al (Footnote 1) and updated using the Consumer Price Index.
- 5 Phillips, et al. Op Cit.
- 6 There are an estimated 3,620 persons who hunt elk, 4,000 who hunt mule deer, 2,000 who hunt white tail deer, 150 who hunt bighorn sheep and 35 who hunt grizzly bear. Each hunter holds an average of 2.5 licences. There is comparatively little waterfowl or upland game hunting in the area.
- 7 These expenditures do not include licence fees due to lack of data for determination of that portion of fees attributable to the Castle River area. All hunters are required to purchase a wildlife certificate but will hold one or more (average 2.5) of a wide array of game and bird licences. Secondly, the hunters will hunt in one or more locations throughout the province. The licence fee expenditures attributed to the Castle River area are not known; but are probably in the order of \$10-\$20 per hunter per season (see Stewart, Weir & Co. Lakeland I.R.P.: Financial Income and Employment Analysis, 1985, fn. 6, p. 39).
- 8 Percentage breakdowns are based largely on an activity profile provided in "Tourism Destination Area Study - Tourism Inventory and Assessment of Land of the Midnight Twilight", prepared for Travel

Alberta, March 1983, p. 147. Hunting and Fishing participation rates are based on Phillips et al and Alberta Fish and Wildlife Division information. Given these estimates; other recreation participation rates are estimated from the activity profile in the Travel Alberta report. The proportion were then adjusted to reflect the dominance of angler activity in the area based on estimates provided by the Alberta Fish and Wildlife Division.

- 9 Figures are based on expenditures for non-consumptive wildlife trips in Alberta obtained from the 1981 National Survey on the Value of Wildlife to Canadians, Canadian Wildlife Service, Environment Canada, and converted to 1985 dollars. Fifty percent of travel costs and 100 percent of lodging and food costs are assumed to be spent locally. The proportional cost breakdown between travel and lodging/food is confirmed by proportional breakdowns given in 1982 Alberta Travel Survey: A Non-Resident Visitation Study, Summary Report, Vol. 1, Travel Alberta, no date.
- 10 A 1.7 percent annual growth rate is expected largely on the basis of the population growth rate in Alberta along with general recreation trends throughout North America as a whole. The Alberta Bureau of Statistics estimates Alberta's current population growth rate to be 1.4 percent per year. This rate was taken into consideration along with a generally aging population, future rising energy costs and a trend toward user pay increases in identifying the 1.7 percent rate. These factors were identified and considered in U.S. outdoor recreation demand projections made by the U.S. Dept. of Agriculture, An Assessment of the Forest and Range Land Situation in the United States, Forest Service FS-395, Washington, D.C., January, 1980.
- 11 Includes Alberta Fish and Wildlife figures presented above.
- 12 The ability of facilities to absorb visitations is based on the following formula for both overnight and day use: $70 \text{ days} \times 3.2 \text{ persons per site} \times \text{number of sites} = 224 \text{ visitor days per site per year}$
 $\times \text{number sites} = \text{total annual visitor day capacity}$. This formula is similar to those used by the Alberta Forest Service: $100 \text{ days} \times 2 \text{ roll over} \times 0.6 \text{ adjustment factor} \times 3.07 \text{ persons per site} \times \text{number of day use sites} = 368 \text{ annual visitor days per site} \times \text{number of day use sites} = \text{total annual visitor day capacity for day use facilities}$; $100 \text{ days} \times 0.6 \text{ adjustment factor} \times 3.2 \text{ persons per site} \times \text{number of campsites} = 192 \text{ annual visitor days per site} \times \text{number of campsites} = \text{total annual visitor day capacity for overnight facilities}$.

3.0 AGRICULTURE

3.1 Introduction

Livestock production is the mainstay of the agricultural industry in the Castle River I.R.P. area. There are 43 grazing leases and two grazing permits in the White Area on Crown land. These leases encompass 152 quarter sections (9,842 ha) and support 7,820 Animal Unit Months (AUMs) of grazing. Within the Rocky Mountain Forest Reserve, domestic grazing occurs on four allotments. The allotments have a carrying capacity presently rated at 4,073 AUMs of use, based on 1977 carrying capacities:

RMA	1977 Carrying Capacities (AUMs)
A	808
B	560
C	657
D	2,048
Total	4,073

Over the past 20 years, grazing use in the Castle River area has declined from a peak of 5,569 AUMs in 1962, down to an average of 4,603 AUMs during 1971-77, and dropping again to an average of only 4,037 AUMs during 1978-84.

The range development envisioned in the IRP - Castle River would only see existing rangelands improved so that 1,120 additional AUMs per annum could be generated.

This very modest agricultural development scenario would not be in conflict with high potential recreation development areas.

3.2 Potential Agricultural (Grazing) Lands

There are four range allotments in the Green Area of the Castle River I.R.P. Area. (Table 3.1 and Figure 3.1) These allotments involve about 12.4 percent of the total area of the region. The number, area, and location of these range allotments have all remained constant over at least the last fifteen years.

Range improvements on these existing rangelands are only envisioned to meet the present deficits, and/or future demands of AUMs of grazing. The additional AUMs required per RMA are converted to acres (hectares) of rangeland using a conversion factor of 3.5 acre per AUM. Thus, the following areas would be impacted:

RMA	AUM Maintenance and Development Requirements	Acres (hectares)
A	150	525 (212)
B	220	770 (312)
C	150	525 (212)
D	600	2,100 (850)
Total	1,120	3,920 (1,587)

* Assumed 1977 Carrying Capacities for this I.R.P. were better estimates of forage production than Preference Quotes.

Table 3.1
Range Allotments within the Green Area of Castle River I.R.P. Area

Range Allotment	Area		Primary Range (Acres)	Secondary Range (Acres)	Unusable Area (Acres)
	(Hectares)	(Acres)			
Castle River	74,438.9	183,936	12,228	8,036	163,672
Jackson Creek	711.06	1,757	--	61	1,696
Mill Creek	8,341.27	20,611	1,889	25	18,697
Southend	15,894.03	39,496	5,207	3,211	31,078
Total	99,475.26	245,800	19,324 (7.8%)	11,333 (4.6%)	215,143 (87.6%)

CASTLE RIVER INTEGRATED RESOURCE PLAN

RANGE ALLOTMENTS

Legend

- JACKSON CREEK
- SOUTHBEND
- MILL CREEK
- CASTLE RIVER
- PLANNING AREA BOUNDARY

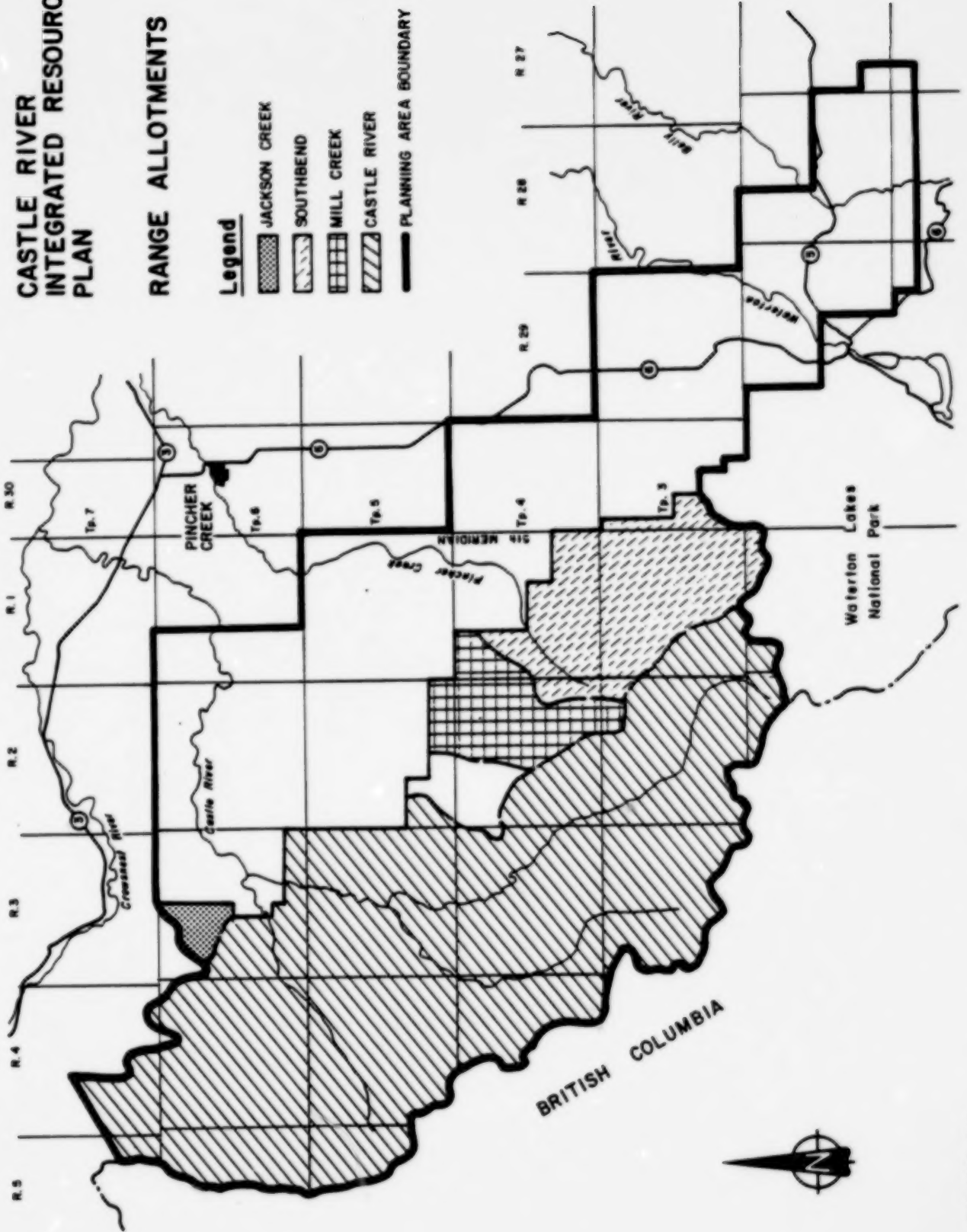


FIGURE 3.1

A total of 1,120 AUMs translates into the equivalent of about 279 yearlings per year, assuming a 6 months grazing season.¹

3.3 Potential (Private) Revenues

Revenue projections are derived from the incremental AUMs produced (as above). That is, using a 12 to 1 conversion ratio of forage to beef produced², a figure of 65 pounds (29 kg) of beef per AUM is then calculated. This figure coincides with estimates already employed by the Public Lands Division/ENR, i.e., 300 pounds/grazing season.

At a selling price of 75 cents per pound, this then translates into:

$$65 \times .75 = \$ 48.75 \text{ per AUM}$$

Or, in other words, the annual projected (private) gross revenue of the proposed pasture lands, after full development, should amount to about:

$$1,120 \times \$48.75 = \$54,600 \text{ per annum}$$

This is equivalent to approximately \$196 per yearling/year.

3.4 Development Costs

The cost of range improvements depends on:

- (a) the type of improvement - eg., burning, herbicide application, blading, riding.
- (b) site characteristics - slope, aspect, soil development as a function of the density, and type of existing vegetation.
- (c) wage costs for: (i) surveys to assess the affects of logging (i.e., how many AUMs of grazing are provided in cutovers); and (ii) writing range improvement and the range allotment management plans.

Range improvement by clearing and piling aspen cost \$124/ acre in Kananaskis Area during 1984. Cost will vary each year though and depends on the size and density of aspen.

Some cost estimates prepared by the AFS for this particular region calculate that range improvement costs would range from \$149 to \$210 per acre (\$367 - \$518/ha):

<u>Range Improvement Costs</u>		
	(\$/ac)	(\$/ha)
1. Clearing and piling into windrows	85-100	210-247
2. Land Maintenance (2 years later) - herbicide treatment	20- 50	49-123
3. Reseeding with grasses	20	49
4. Repiling windrows and burning	<u>24- 40</u>	<u>59- 99</u>
TOTAL	149-210	367-518

If the cost was typically \$200/acre, the total range improvement cost anticipated would amount to some:³

$$3,920 \times \$200 = \$ 784,000$$

It is expected that this entire cost would be borne by the government.

3.5 Production Costs

Most, if not all, of the livestock enterprises in this area are cow-calf operations. For simplicity (and as a proxy), however, we have estimated private livestock production costs on the basis of the annual purchase/sale of yearling heifers and steers. These production costs would be expected to be as follows:⁴ (per head)

Alta. Cattle Commission, Insurance, Brand, and Inspection	\$ 1.25
Yardage Fees	13.00
Veterinarian Costs, Salt	5.00
Trucking Costs	20.00
Operating Interest ⁵	
Purchase Price	21.91
Production Costs (50%)	.90
Inventory Losses Via Price ⁶	<u>26.40</u>
TOTAL	<u>\$88.45</u>

For 279 yearlings this would translate into an approximate total cost of:

$$279 \times \$88.45 = \underline{\$24,700}$$

And, in addition, a land rental charge of about \$2.00 per AUM/annum would be payable to the government.⁷ That is:

$$1,120 \times \$2.00 = \underline{\$2,240}$$

3.6 Income and Employment Generation

Estimated incremental income generation, based on the above estimates, would thus be expected to be approximately as follows:

Incremental Gross Revenue	\$54,600
Less Incremental Costs	<u>26,940</u>
Equals Net Income	<u>\$27,660/annum</u>

Or, assuming an annual net income requirement of \$20,000/year/rancher, this would only translate into perhaps 1.4 full-time person-year equivalents in the agricultural sector.

It should also be recognized that because of the time required to improve these lands for livestock production, this very marginal increase might not be realized for 5-10 years.

On the other side of the ledger, the total public capital cost anticipated could exceed 3/4 of a million dollars while annual revenues would amount to perhaps \$2,500 more per annum. In addition, a special government-funded research study (regarding the vegetation) might add a further \$140,000 on to total capital costs.

In short, from a regional perspective, the expected impact of these proposed improvements on the economy would be extremely small; imperceptably so. This essentially means that proposed public expenditures of the magnitude suggested here could only be justified if other non-agricultural benefits (e.g., environmental protection) were also considered.

3.7 Summary

As previously noted, livestock production is the primary agricultural industry in the Castle River Area. The use of range allotments continues to be important to ranchers in the area. The Castle Plan provides for range improvements to increase the capacity of the existing allotments by 1,120 AUMs per year.

These improvements will be undertaken by the provincial government at a cost of approximately \$784,000.

The additional AUMs will generate a net income of \$27,600 per year, or in other words, provide for perhaps 1.4 full time person-year equivalent of employment. In addition, the province would receive revenues from land rental charges of \$2,240 per annum after year 7. Basically, the proposed range improvements, as a result of Plan implementation, will have a relatively small impact on the regional economy. The streamed results of range improvement expenditures and revenues by government are provided on the following table.

Range Improvement Summary

<u>Year</u>	<u>Government Expenditures</u>	<u>Government Revenues</u>
1		
2		
3	\$392,000	
4	98,000	
5	98,000	\$ 560
6	98,000	1,120
7	98,000	1,680
8	0	2,240
9	0	2,240
10	0	2,240
11	0	2,240
12	0	2,240
13	0	2,240
14	0	2,240
15	0	2,240
16	0	2,240
17	0	2,240
18	0	2,240
19	0	2,240
20	0	2,240
21	0	2,240
22	0	2,240
23	0	2,240
24	0	2,240
25	0	2,240
26	0	2,240
27	0	2,240
28	0	2,240
29	0	2,240
30	0	2,240
Total	\$784,000	\$54,884
NPV 5%	\$638,811	\$23,941
NPV 10%	\$527,909	\$12,053

Footnotes to Chapter 3

1 An Animal Unit Month (AUM) is the amount of feed or forage required by an animal unit (AU) for one month. An animal unit is considered to be one mature 1000 lb. (450 kg) cow or the equivalent based upon average daily forage consumption of 26 lbs. (11.8 kg) of dry matter per day or 780 lbs. (354 kg) per month. Yearling heifers and steers are each equivalent to 0.67 AU. To derive the number of yearlings on pasture per grazing season, the total AUMs are therefore divided by the number of months on pasture divided by .67 ($\text{AUMs} \div 4.74 \div .67$).

2 Consistent with: MacDonald, K., "Rangeland Improvement: Procedures, Costs and Benefits", a paper presented to the CSSS Annual Meeting, August 26-29, 1984, Banff, p. 13.

3 Courtesy of Mr. Varge Craig, ENR/Public Lands, Lethbridge. Very similar estimates can be found in: ENR/Public Lands Division, Range Improvement Programs, 1983-1984, Year End Report, Edmonton, Summer 1984. Other estimates of land development costs can be found in: Visser, P., A Study of Land Development Costs in the Peace River Region, 1984, Alberta Agriculture, Edmonton, 1984.

4 The first four production costs are extracted directly from K. MacDonald, op. cit., p. 17.

5 Interest costs (for 4.75 mos. at 12% per annum) for the purchase price of the yearling are based on a purchase price of 79.4 cents per pound (See footnote (8) following), and an assumed initial weight of 600 lbs. i.e.:

$$.794 \times 600 \times 0.46 = \$21.90$$

Interest costs to cover current operating costs assume one-half of expenditures require financing (while the other half are incurred when the animals are sold) and total costs (re: cost items 1-4) amount to \$39.25 per animal. i.e.:

$$39.25/2 \times .046 = \$.90$$

6 Assumes a spring-fall price differential of -4.4 cents/lb. (via K. MacDonald, op. cit.). i.e.:

$$600 \times 0.44 = \$26.40$$

7 Actual rental charges (including a royalty of 8 1/3%) during 1980-84 were as follows:

1980	1.95
1981	2.10
1982	1.90
1983	1.95
1984	2.00

4.0 TIMBER HARVESTING

4.1 Introduction

The Castle River I.R.P. contains portions of forest management unit (F.M.U.) C3 and F.M.U. C01 within the Bow/Crow forest. Only F.M.U. C3 lies within the Green Area and is managed on a sustained-yield basis. R.M.A.'s A, B, C and D are contained within F.M.U. C3 and R.M.A. E lies within F.M.U. C01. Table 4.1 indicates the current area, volume and annual allowable cuts (AAC's) of the F.M.U.'s within the Castle River I.R.P. Area.

Table 4.1
Timber Area, Volume and AAC in the Castle I.R.P. Area

	<u>F.M.U.</u>	
	<u>C3</u>	<u>C01</u>
<u>Coniferous</u>		
Area	52 801 ha	3 689 ha
Volume	6,415 300 m ³	417 600 m ³
Current AAC	17 035 m ³	1 500 m ³
<u>Deciduous</u>		
Area	4 991 ha	806 ha
Volume	201 100 m ³	56 300 m ³
Current AAC	1 168 m ³ /yr	No AAC Calculated

Timber harvesting in the Castle River I.R.P. is allocated by quota, by commercial timber permit (CTP) and by local timber permit (LTP). Currently two quota commitments for commercial needs exist in the area, and in 1983-84 24 LTP's were issued. Projected demand in F.M.U. C3 is 65 702 m³ for commercial quotas and 4 000 m³ for local needs. Table 4.2 includes the total greenwood harvest statistics for all dispositions (i.e. quota, CTP and LTP) for the period 1980 to 1985.

Table 4.2
Total Greenwood Harvest

(All Dispositions)	1980-83	1984	1985 To Date
Volume Harvested	344 270 m ³	13 709 m ³	967 m ³
Net Timber Value	\$1,912,323	\$76, 149	\$5, 371
Stumpage Revenues	\$ 240,989	\$ 9,596	\$ 676
Employment (Man Years)	360	14	1
Employment Income	\$7.4 - 9.3 million	\$342-430 thousand	\$24-30 thousand

The Castle River I.R.P. forest area has been affected by Mountain Pine Beetle infestation and since 1979 beetle kill salvage operations have been undertaken. Approximately 555 000m³ covering 4 048 ha has been recovered from these sites. The infestation has resulted in a significant reduction of the AAC for F.M.U. C3. The projected commercial quota and local demands will continue to be met but through amalgamation of F.M.U.'s C1,C2 and C3 (only C3 lies within the Castle River I.R.P.), into F.M.U. 5.

Table 4.3 indicates estimates of the past and proposed beetle kill salvage statistics for the Castle River I.R.P. area.

Table 4.3
Beetle Kill Harvest Statistics

	1979-83	1985	Projected (1985 +)
Amount Harvested	555,000 m ³	32,501 m ³	5,000 m ³
Stumpage Rate Revenues			
- pine (90%)	\$ 89,910	\$ 5,265	\$ 810
- spruce (10%)	<u>38,850</u>	<u>2,275</u>	<u>350</u>
Total	\$ 128,760	\$ 7,540	\$ 1,160
Net Timber Value ⁽¹⁾ (\$23.84/Mfbm)	\$3,082,870	\$180,534	\$ 27,774
Employment Generated			
- logging (0.387myr./mm ³)	215 myr.	12.6 myr.	2 myr.
- lumber production (0.66myr./mm ³)	<u>370 myr.</u>	<u>21.5 myr.</u>	<u>3 myr.</u>
	585 myr.	34.0 myr.	5 myr.
Employment Income (\$24,000 - \$30,000/annum)	\$14.04-17.55 million	\$0.816-1.02 million	\$120-150 thousand

(1) Net Timber Value - represents the net benefits derived from the production of lumber per unit end product based on average wholesale lumber prices less production costs (labour and capital) for this region. These were derived from a separate AFS study of timber values.

Note: All values are stated in real (1984) dollars. The values shown in Table 4.2 represent relative estimates and do not necessarily represent actual amounts.

4.2 Impact on Timber Harvesting

Most of the Castle River I.R.P. came under the 1977 Eastern Slopes Policy. In the original Policy document portions of the Castle River Area were designated as Prime Protection Zone. This designation which was reaffirmed in the Castle Sub Regional Plan, conforms to this policy. Basically, the valleys of the Scarpe, Grizzly and Jutland creeks have been designated as Prime Protection Zones. Within this zone logging operations are not permitted, except for sanitation/salvage treatments. Thus, these lands have been removed from the permanent timber land-base. It is estimated that 534 ha of sustained-yield management area will be deducted from the total productive land area of F.M.U. C3 (57 792 ha).

Offsetting the reductions of productive timber land in FMU C-3 will be the addition of 1 488 ha (3 684 ac) of productive timber land from the white area to the forest land base of FMU C-01. Although accurate estimates of the timber volumes and AAC are not available for this land area, the area and timber volume will be managed for sustained yield under forest management principles. Since no AAC figures are currently calculated for this area, it is difficult to attach a value to the potential benefits derived from these additions.

However, the potential estimated economic rates of return of the Castle River Area before the deletion and the estimated loss anticipated from deducted areas can be calculated. Table 4.4 shows the potential rates of return from the present AAC levels and Table 4.5 indicates the effects of the reduction.

Table 4.4
Potential Economic Returns from Present AAC Levels

AAC (coniferous)	18 535 m ³ (1)
Net Timber Value (\$23.84/Mfbm)	\$102,957/yr
Stumpage Revenues	\$ 12,956/yr
Employment (man years)	
- logging (0.38 myr/Mm ³)	7.2 myr/annum
- lumber production (0.66 myr/Mm ³)	<u>12.2</u>
Total	19.4 myr/annum
Employment Income (\$24 - \$30,000/annum)	\$465,600 - \$582,000/yr

-
- (1) Note: The AAC figure used here is based on a combined coniferous volume F.M.U.'s C3 and C01 with consideration of the effects of beetle kill salvage operations. Although AAC's for each F.M.U. are unique and therefore strictly not additive, sum totals are used only to represent relative economic values of this coniferous volume.

Table 4.5
Effects of Reductions in Sustained Yield Management Area

Area Lost	
- coniferous	481 ha
- deciduous	<u>53 ha</u>
Total	534 ha
AAC Lost (Estimated)	
- coniferous	188 m ³
- deciduous	<u>17 m³</u>
Timber Land Values (\$/ha)	
- coniferous	\$ 9.00/ha
- deciduous	\$ 6.98/ha
Stumpage Revenues Foregone	\$ 132/annum
(coniferous)	
Net Timber Values	
- lumber	\$ 1,042/annum
Employment Foregone	
- logging	.07
- lumber production	<u>.12</u>
	.19 my/annum
Employment Income Foregone	\$4,560 - \$5,700/annum

Table 4.5 illustrates that the implementation of the Castle River I.R.P. will have a relatively insignificant effect upon the timber resource, revenues and employment.

4.3 Summary

In conclusion, the 534 ha of productive timber land lost from FMU C-3 will be more than offset by the addition of 1 488 ha to FMU C-01, that will be managed for sustained yield. A decrease in logging activity in the short term in the area may be expected, due to the Mountain Pine Beetle infestation, poor age-class distribution of the species, and currently unfavourable market conditions. The economic benefits foregone can be calculated and these are minimal. It is important to note that the protection of the headwaters of the Eastern slopes has been assigned the highest priority in the overall management of this area. This policy direction is a reflection on the value attached to watershed in this region. Their protection, therefore, is valued well above the opportunity cost of the timber potential.

5.0 MINERAL RESOURCES

5.1 Introduction

Petroleum, natural gas, coal and mineral exploration and extraction all take place in the Castle River Area to varying degrees. This section of the report provides an explanation of the economic and employment impacts resulting from Plan implementation.

5.2 Impact of the Plan - Government Activities

One component of the Castle River I.R.P. is that it directs, for this subregion of the province, where mineral resource exploration and development activities may occur. In doing so, however, it does not require the government to undertake any new programs or projects. It also does not incur increases in government expenditures in order to implement the Plan's mineral resource goals, objectives and guidelines, with the possible exception of compensation claims in the Maverick Hill area where surface coal developments may not be allowed. Government activities incremental to the Plan will be limited to the registering of "no", "conditional" and "compatible" mineral activity areas on divisional maps and records which are referenced when approving access for exploration or accepting mineral disposition applications and posting requests.

5.3 Impact of the Plan - Mineral Resource Activities

The Plan does involve several incremental effects on the mineral resource activities themselves. These effects are a direct result of the plan's proposed revisions to the Eastern Slopes Policy zoning configuration and the addition of resource management guidelines. There are four areas of significant zoning change within the Castle River subregion: Front Range Creek valleys; Gladstone, Mill and Whitney Creek valleys; Maverick Hill and Font Creek valley.

1. Front Range Creek Valleys

Eastern Slopes Policy - General Recreation (Zone 4)

Castle River Plan - Critical Wildlife (Zone 2)

This proposed zoning revision will change the renewable resource management focus of these valleys from recreation to wildlife protection. The revision, however, should not have any net effect on the opportunities for mineral resource exploration and development. Under either zone, coal, petroleum, natural gas and mineral activities are each considered to be "permitted" uses given the application of certain restrictions like restricted winter access due to range conflicts with sheep. Natural gas development is the main focus of the existing mineral activities in this area. The creek valleys contain the majority of wellsites from which the Waterton field gas is tapped and produced. The zoning change should not affect positively or negatively these ongoing activities.

2. Gladstone, Mill and Whitney Creek Valleys

Eastern Slopes Policy - General Recreation (Zone 4)

Castle River Plan - Multiple Use (Zone 5)

The restrictions on future mineral resource activities will be less stringent in these creek valleys as a result of the proposed zoning change. These valleys already contain some wellsites in conjunction with the development of the Waterton natural gas field. It is unlikely that the relaxation of restrictions in these creek valleys will have the effect of stimulating further exploration and development activity here, as it appears the Waterton natural gas play is already fully developed.

3. Maverick Hill

Eastern Slopes Policy - Multiple Use (Zone 5)

Castle River Plan - Critical Wildlife (Zone 2)

The proposed change in zoning, which will afford additional protection to critical winter elk habitat, will bring with it a definite effect on mineral resource opportunities. While petroleum and natural gas activities should be able to proceed subject to site specific guidelines designed to protect the area's wildlife, coal developments are encouraged to be accessed by underground means only. An estimated 39.4 megatonnes* of surface mineable coal reserve may be affected if underground mining is deemed too costly. Until economically feasible, this may delay indefinitely development of nearly one-third of the planning area's total recoverable coal reserves.

4. Font Creek Valley

Eastern Slopes Policy - Prime Protection (Zone 1)

Castle River Plan - General Recreation (Zone 4)

Under the Prime Protection zone of the Eastern Slopes Policy, all mineral resource activities are not permitted uses. The General Recreation zone proposed for the Font Creek area will still not permit coal, quarriable and metallic mineral activities, but it will open the area to carefully controlled and conducted petroleum and natural gas exploration and development. This change in zoning may bring with it immediate activity from industry. They have already made known their intentions to drill a test well in the Font Creek valley once the plan is approved. According to their information submissions, the well will take from 7 months to a year to drill at an estimated cost of \$9 million. This cost will be offset somewhat through provincial incentive programs. The activity will involved the immediate employment of a deep rig (a rig type which is currently under

* Reserve figure based on ERCB report ST 84-31. It is the sum of recoverable surface reserves within those portions of the designated coal fields and deposits in the Maverick Hill area.

utilized) and could stimulate some economic activity in the service industries of the region. Depending upon the success of the test well, additional drilling and development activity may follow.

5. Spionkop Ridge

In 1964, properties in this area were explored and found to be rich in copper, silver and uranium ores. Prior to the preparation of the Integrated Resource Plan, the government disallowed activity due to the critical wildlife environment found in this area. The completion of the plan substantiated the prior decision by confirming this area as a prime protection zone. The resulting sterilization of the area and any possible compensation to the lessee of the property would have accrued with or without the plan, thus the effects of any compensation have not been considered in this analysis.

5.4 Summary

The Castle River IRP provides direction for the location of and conditions for the development of mineral resources in the area. The plan has revised the previous Eastern Slopes Policy zoning configuration in four areas: Front Range Creek valleys; Gladstone, Mill and Whitney Creek valleys; Maverick Hill and Font Creek valley. Petroleum and natural gas activities should be able to proceed in all these areas subject to conditions imposed to reduce the impact on wildlife, the environment and other uses. Coal, quarriable and metallic mineral activity continues to be allowed in Front Range Creek valleys. Only underground coal development at Maverick Hill will be encouraged, while all coal, quarriable and metallic mineral activity in Font Creek valley continues to be a non-permitted use.

6.0 REGIONAL INCOME, EMPLOYMENT, AND DEMOGRAPHIC IMPACTS OF THE PROPOSED PLAN

6.1 Introduction

This chapter, using employment, income and demographic impact analysis, identifies employment, income and demographic impacts which would be generated directly, indirectly, and through induced processes, in the Study Region if the Castle River I.R.P. were to be implemented. The analysis undertaken in this chapter will not provide guidance as to whether or not the program should be undertaken in societal cost/benefit terms.¹ The methodology used traces the impact on the Regional economy of transfers of money to the local economy and the results of incremental local production associated with the proposed Plan's implementation. Transfers may be in the form of spending in the Region by senior governments, or grants or subsidized loans from senior governments to local governments and/or individuals. Once such funds are transferred to the Region, using this methodology, the employment and income benefits from these transfers are traced. Increased production, centering on the recreation economy, and to a much lesser extent agriculture, results in further income generation in the Region.

Financial analysis deals with benefits at market prices to a firm, institution, or individual in society. Economic analysis, on the other hand, is concerned with overall societal costs and benefits. In economic analysis, pricing is based not on market prices but on so-called shadow prices (often border prices). Shadow prices attempt to reflect more accurately the value of an economic factor to society. In addition, economic analysis attempts to trace externalities, for example, the costs of smoke from a factory may induce poor health in people living close to the smoke source; economic analysis would trace the economic (or "real") costs of this smoke. The type of analysis undertaken in this chapter is based on market prices and does not attempt to trace externalities. Therefore, the term income analysis is used rather than economic analysis.

There are two main types of multiplier analysis, income and employment. In this section, the analysts have focused on employment multiplier analysis. This is because in remote or small regions with high leakages (that is, most goods and services must be imported and most local primary production is exported), the main benefits to the region, even in income terms, are in terms of local employment (in this chapter we are assuming that income earned by ranchers, trappers, and ranch developers is a return on labour or employment, rather than a return on capital (profits)).

There are three methods of undertaking multiplier analysis; the economic base approach, the quasi keynesian approach and the input/output approach. The economic base approach works best in regions with a simple two sector economy, e.g., forestry and services or agriculture and services. It also works best where there is a leading sector based on export from the region. The quasi keynesian approach is similar to the economic base approach except that it disaggregates the economy into more sectors and disaggregates the induced spending process more than does the economic base approach. It is suitable for medium sized regions with more complex economies than primary resource regions. The input/output approach can only be undertaken at reasonable expense if input/output tables already exist. It yields significant advantages in highly complex economies, such as metropolitan economies.

The approach taken in this chapter is to first undertake employment multiplier analysis using the quasi keynesian approach given its methodological refinement over the economic base approach. The input/output approach is not relevant to an economy as simple as that being examined. Once an employment multiplier has been identified for the Study Region, our methodology is based on converting the employment multiplier to an income multiplier.

Employment and income multiplier analyses are very necessary prerequisites to implementation and an important component of the planning process. Unless one undertakes this type of analysis, one is unable to estimate the



number of facilities that will be needed, the types and numbers of public sector employment that will be needed, infrastructural demands, etc. In addition to its value for planning purposes, this type of information is central to socio-economic impact assessment of plans/programs.

6.2 Definitions

The Direct employment and income categories represent activity that would be directly created in the Study Region by implementation of the Castle River I.R.P. In the Castle River case, this is activity related to construction and operation of recreation facilities and less significantly to agricultural production. Linked employment and income categories represent activity generated through input/output linkages with the Direct activity. For example, delivery of goods and services to those constructing and operating recreational facilities is a linked activity in the case of recreation. Linked activities which are associated with Direct activities and are located in the Study Region have been included in the analysis in this chapter. Induced employment and income categories represent activity created in the Study Region as a result of demand for goods and services generated by Linked and Direct activities in the Study Region. In terms of the private sector, Induced activity is mainly the result of spending by employees in the Direct, Linked, and Induced categories. In the case of the public sector, Induced activity is mainly the result of public service needs and demand in the Region generated by the Direct, Linked and Induced employees and their families. Incremental demand for public services is usually only created by in-migrants to the Region. Induced public sector employment is more closely correlated with population changes than with income changes.

In this chapter, all dollar figures refer to 1985 dollars, that is, the analysis is undertaken in real dollar terms.

6.3 Methodology

Figure 6.1 describes the Study Region used for analysis in this chapter. The reason that the Region is larger than the Castle River I.R.P. Region is that many impacts of the Plan, if it is implemented, will occur in nearby settlements, particularly Pincher Creek and the Municipality of Crowsnest Pass. For example, a high percentage of goods and services consumed by recreators will be purchased in these centers, and education and health services will be provided from these centers to a significant extent. All impacts occurring in the Region identified in Figure 6.1 are assumed to be regional (or local) in the context of this chapter.

The analysis in this chapter is based on the two scenarios related to the magnitude and phasing of construction, management, and operation of recreation facilities and programs described in the Sections 6.5 and 6.6.

As is always the case, the analysts had to make numerous assumptions concerning behaviour, wage rates, demographic coefficients, employment requirements of various tasks, etc. Where possible, the analysts have based their assumptions on a comprehensive data bank established for the Study Region, analogous situations, and on many years of experience in undertaking similar types of analysis in Alberta and other parts of Canada. The assumptions which the analysts used in undertaking the research for this chapter are described in Appendix 2. The reader may reasonably disagree with some of them. The model can be rerun based on differing assumptions; however, in many cases changes in assumptions in the order of 25% will not affect output significantly.

The results presented in this chapter should be interpreted as being indicative only. Time and resources to undertake the analysis were limited. However, even with unlimited time and money, as we all know, human behaviour and its income/employment/demographic ramifications are not predictable. One can only make probabilistic statements. Nevertheless, the information

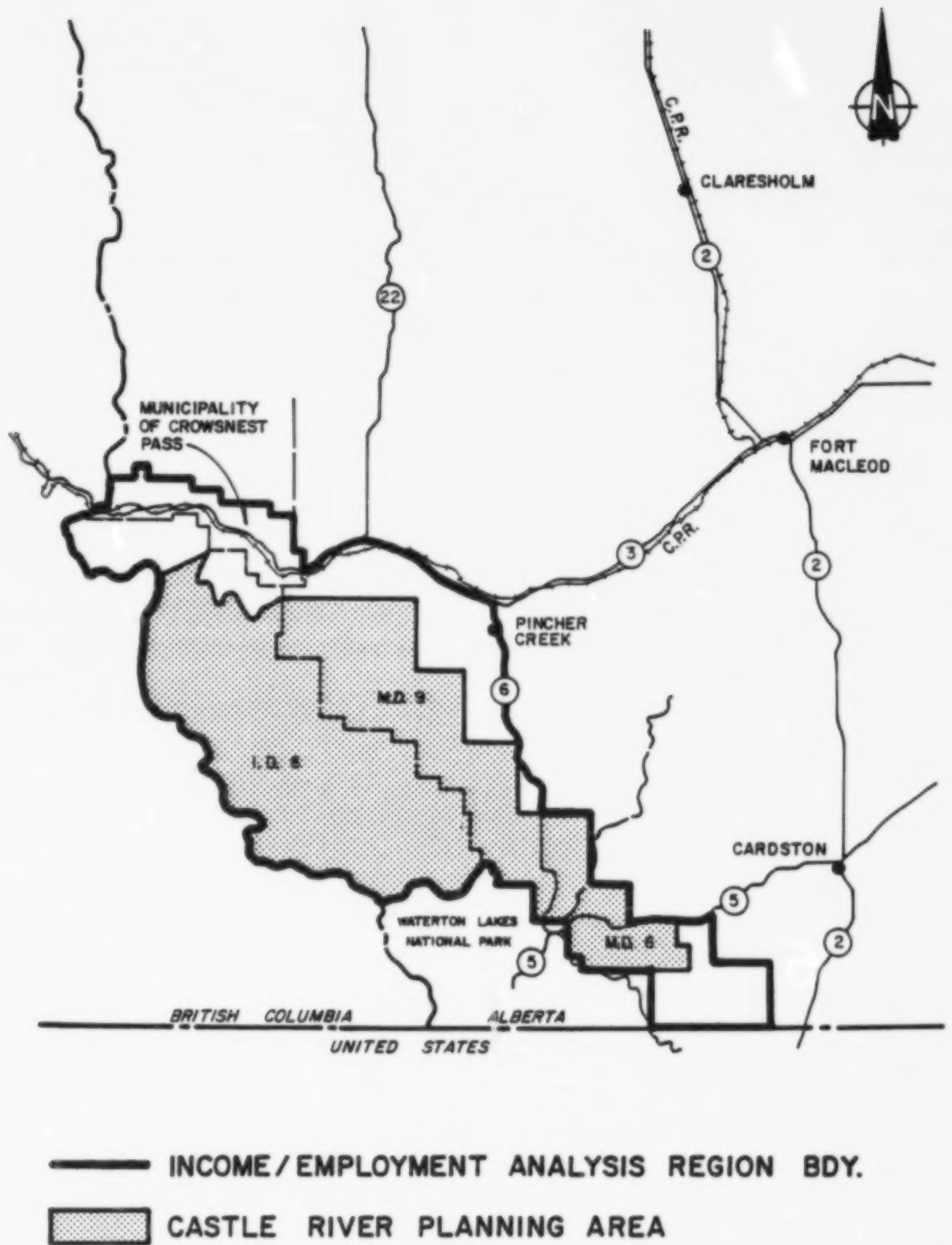


Figure 6.1

presented is of sufficient accuracy for planning, governmental decision-making and socio-economic impact assessment purposes. More detailed assessment could be undertaken at a feasibility analysis level of detail, whether the costs of such detailed work would be justifiable is debatable.

6.4 Socio-Economic Background: Castle River Study Region

Human Settlement

Settlement in the Castle River I.R.P. Sub-Region is very sparse. All settlement is rural. Beaver Mines, a small hamlet, represents the only concentration of population in the Castle River I.R. Sub-Region. The Castle River I.R. Sub-Region comprises portions of Improvement District 6 and Municipal District 9 (M.D. of Pincher Creek). Based on 1983 Census information, I.D. 6 had a population of 382 while M.D. 9 had a population of 2,970. If we assume that 1/2 the population of I.D. 6 lives in the Castle River I.R. Sub-Region and that 20% of the population of M.D. 9 lives in the Castle River I.R. Sub-Region, the total population of the Castle River I.R. Sub-Region is approximately 785 people. This is probably an overestimate.

The Study Region's population is much larger than the population of the Castle River I.R. Sub-Region proper primarily because it contains the town of Pincher Creek with a population of 3,712 (1983) and the Municipality of Crowsnest Pass with a population of 7,577 (1983). The latter municipality is composed of the settlements of Bellevue, Blairmore, Coleman, Frank, and Hillcrest Mines. In addition, the Study Region contains approximately 500 rural residents of M.D. 9 who live in the Study Region but do not live in the Castle River I.R. Sub-Region proper. Therefore, in total, the population of the Study Region is approximately 12,574.

Given this situation, it is not surprising that almost all employment, income and demographic impacts resulting from implementation of the Castle River I.R.P. will primarily impact the surrounding settlements of Pincher Creek and Crowsnest Pass. The fact that Pincher Creek lies more directly on

the route from Calgary to the Castle River I.R. Sub-Region gives it an advantage in capturing these impacts even though Crowsnest Pass is larger. Of course, Crowsnest Pass is in a better position to "intercept" traffic coming to the Castle River I.R. Sub-Region from British Columbia.

Economy

The economy of the Study Region is based primarily on tourism, ranching, logging, and gas production plus service functions. The Study Region (especially in the north) has a history of coal mining but at present this function is dormant because of poor market conditions, and, in some cases because the most accessible deposits have already been mined.

Income data is not available for I.D. 6 for confidentiality reasons - its population is small enough to possibly facilitate identification of individuals. However, 1981 census data indicate that there is no unemployment in the I.D. among either males or females. Hence, any job creation as a result of the implementation of the Castle River I.R. Plan will probably either result in employment of existing residents of Crowsnest Pass or Pincher Creek or result in in-migration to these two settlements.

Eighty percent of males in I.D. 6 work in primary occupations (mainly ranching and logging) while 66% of females work in primary occupations (mainly ranching). The remainder of females work in service jobs while the remainder of males work in managerial and administrative jobs.

The economy of Crowsnest Pass is currently dependent on sawmilling, lime quarrying, gas processing, metal fabricating, and service center functions. As noted above, the mainstay of the Municipality's economy has traditionally been coal mining but this industry has "fallen on hard times". As a result, unemployment is high, as is indicated later in this chapter. More detailed information concerning the economy of Crowsnest Pass is available from the Alberta of Tourism and Small Business. In their "Alberta Locations" series, there is a comprehensive publication on Crowsnest Pass.

The economy of Pincher Creek is dependent on agricultural servicing, natural gas production, and general retailing/service functions. Although the town lost 113 people between 1981 and 1983, its economy is stronger than that of Crowsnest Pass. As a result, unemployment is lower than in Crowsnest Pass as is indicated later in this chapter. More detailed information on Pincher Creek is available from Alberta Tourism and Small Business in the "Alberta Locations" series noted above.

Social Facilities and Services

Virtually no social facilities and services are available in the Castle River I.R. Sub-Region per se. However, both the Municipality of Crowsnest Pass and Pincher Creek are well served in terms of such amenities.

In Crowsnest Pass, there is a hospital with 5 doctors, including a surgeon; there are three dentists; and 4 senior citizens' facilities. Two daycares, 3 elementary schools, 1 junior high school, 1 high school, and 1 vocational school operate. In summary, in terms of health and educational services, there is overcapacity. This means that the Castle River I.R.P. can induce in-migration without the Municipality of Crowsnest Pass facing substantial fiscal costs.

Crowsnest Pass has 2 local newspapers, numerous recreational facilities, and 21 operating public service organizations. Twelve provincial government Departments plus three Federal Ministries operate offices in the Municipality. More detail concerning social facilities and services available in Crowsnest Pass can be found in the "Alberta Locations" publication on the Municipality noted above.

In Pincher Creek, there is a hospital with 2 surgeons; there are 3 dentists; and two senior citizens' facilities. Two daycares, 3 elementary schools, 2 junior high schools, and 2 high schools operate. As is the case for Crowsnest Pass, there is overcapacity in terms of educational and health facilities.



Pincher Creek has a weekly newspaper, numerous recreational facilities, and sixteen operating public service organizations. Eleven provincial government Departments plus two Federal Ministries operate offices in Pincher Creek. More detail concerning social facilities and services available in Pincher Creek can be found in the "Alberta Locations" publication on the town noted above. In addition, the Pincher Creek and District Economic Development Board has recently (1985) published an excellent survey of the community entitled, Pincher Creek and Area Community Services Directory.

Development Opportunities and Prospects

The development problems facing the Study Region are largely related to world markets for resources rather than resource supply problems. In the case of Crowsnest Pass, prospects for coal development look very poor given the likely continuance of declining real costs of oil/gas and the abundance of alternative supplies of coal in the world. In the case of Pincher Creek, the abundance of gas supply in North America does not bode well for the local economy. The ranching economy in the Study Area has been negatively affected by a long-term trend away from consumption of red meats such as beef and by overproduction of beef throughout North American and other parts of the world. Logging in the area is limited because of terrain, climate (in terms of regrowth), the Mountain Pine Beetle infestation and society's increasing preference to use attractive Foothills and Alpine environments for recreational and wilderness land uses.

Given this situation, the most attractive economic sector in the Study Region in terms of growth potential, although not necessarily in terms of its' absolute contribution to the Study Region's economy is Recreation and Tourism. Because the Castle River I.R.P. is recreationally oriented, it is very important in the developmental terms. Other developments in the planning stage in the study area, mentioned later in this Chapter, have significant potential to attract more recreators and tourists to the Study Region. In fact, if the Castle River I.R.P. is implemented and other

developments such as the West Castle Ski Area and Historical Restoration and an Industrial Archeological Park in the Crowsnest Pass area are implemented, there could be significant synergistic effects.

If the tourism/recreation industry is to grow quickly in the Study Region, there is a need for more high quality services in terms of accommodation and restaurants. Also needed are more destination tourist attractions such as the Industrial Archeological Park being proposed by the Alberta Department of Culture for Crowsnest Pass.

6.5 Scenario 1

Scenario 1 is based on the assumptions that recreational facilities will be developed in the Castle River I.R. Sub-Region between 1985 and 2010 to the extent outlined in Chapter 2. It also assumes that existing recreational facilities (both private and public sector) in the Sub-Region and the Study Region will continue to operate. It is assumed that new recreational facilities will be developed and operated by the Public Sector; it is further assumed that private sector contractors will do most of the facility construction under contract from the Alberta government. However, if the same scale and type of recreational development were to be undertaken by the Private Sector, the employment, income, and demographic impacts on the Study Region would not be appreciably different than if the work were undertaken based on Public Sector funding and management.

As noted earlier, impacts identified are those that will occur in the Study Region defined in Figure 6.1. This Study Region is larger than the Castle River I.R.P. Sub-Region because employment, income, demographic and local government fiscal impacts "spill over" into adjoining areas.

The employment, income and demographic impacts identified are those that will result from implementation of the Castle River I.R.P., as interpreted in previous chapters of this document. This study does not purport to trace all impacts from recreational activity that will impact the Study Region



until the year 2010. Rather, it only traces those impacts on the Study Region that are likely to result from implementation and enforcement of the Castle River I.R.P. Other tourism/ recreational developments are likely to occur that will further impact the Study Area in employment, income, demographic and local government fiscal terms. For example, there is a possibility of a ski development at West Castle near Pincher Creek.² Alberta Culture is currently studying the feasibility of initiatives to increase tourism (including destination tourism) in the Crowsnest Pass Municipality and surrounding area based on its rich history. Such development would be based on an Industrial Archeological approach and would include restoring the mainstreet of Coleman, preserving nearby ghost towns and making them more accessible, restoring old collieries, etc. Such development would complement existing attractions in the area such as the Frank Slide Interpretive Center, the Leach collieries, etc.³ In addition, extensive development of Head-Smashed-In Buffalo Jump Historic Site, about 15 minutes driving time west of Fort McLeod could have a significant impact on the Study Region in terms of tourism. For example, the Alberta government estimates that the Head-Smashed-In Buffalo Jump Historic Site alone will attract 115,000 to 200,000 people annually to the vicinity of the Study Area. In summary, this chapter does not trace the impacts of all recreational developments likely to affect the Study Region, let alone all probable private/public sector initiatives that will impact the Study Region. This chapter contains descriptions and analyses of impacts likely to result from the implementation of the Castle River Sub-Regional I.R.P. only.

Table 6.1 describes employment that is likely to be created if the Scenario 1 variant of the Castle River I.R.P. is implemented, by year, to year 25.

TABLE 4.1
EMPLOYMENT CREATION - SCENARIO 1

TYPE OF EMPLOYMENT	YEAR	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2110
A. DIRECT PUBLIC SECTOR																									
1. Recreation - Facility/Program Development ^{1,2}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Recreation - Operating	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. TOTAL DIRECT PUBLIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B. DIRECT PRIVATE SECTOR																									
4. Recreation - Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5. Agriculture - Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Agriculture - Operating	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Forestry - Logging ³	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. Forestry - Logging ⁴	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. TOTAL DIRECT PRIVATE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. TOTAL DIRECT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C. LINKED PRIVATE SECTOR																									
11. Recreation - Servicing Users	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12. Agriculture and Recreation Input Supply	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13. TOTAL LINKED	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
D. INDUCED PUBLIC SECTOR																									
14. B.C.M.P.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15. TOTAL INDUCED PUBLIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E. INDUCED PRIVATE SECTOR																									
16. Retail and Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17. TOTAL INDUCED PRIVATE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18. TOTAL INDUCED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19. TOTAL ALL SECTORS	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

If year 1 is 1986 (that is, implementation of the plan commences in that year), year 25 will be the year 2010. After year 25, if no changes are made in the Plan, employment incrementally traceable to the Plan will not change significantly in terms of the number and mix of employment positions. As is described in Table 6.1, the most significant employment impacts generated by the Plan's implementation will be employment associated with operating public sector recreational facilities. This employment will be most significant in years 10 to 25, peaking at 64.5 full-time equivalent jobs from year 20 onwards.

The second most important employment impact generated by the Plan's implementation will be employment associated with construction of recreational facilities. Most of this employment will be in the private sector, the result of government contracting of such work to that sector. A small amount of this employment, related to project planning and management will be in the Public Sector, in the relevant Alberta government departments. Private sector construction oriented recreational activity will occur in two "spurts"; the first such period of intense recreational construction activity will generate 35.5 full-time equivalent jobs annually from years 10-13 inclusive; the second period of activity will generate 30 full-time equivalent jobs annually from years 15-17 inclusive.

Facility construction will also generate employment in the public sector. This employment is related to initial planning stages and has been calculated on the basis of a 25% public sector participation and 75% private sector. Public Sector employment related to facility and program development will peak in years 5 and 10 when this category will account for 11 full-time equivalent jobs in both years noted. Public Sector facility/program development related employment also will be significant in years 11-13 inclusive when the category will account for 10 full-time equivalent jobs each year and in years 15-17 inclusive when the category will account for 7 full-time equivalent jobs each year.



Grazing land improvements associated with implementation of the Castle River I.R.P. will result in a small amount of employment in ranching - 1.0 job annually in years 4-7 inclusive and 1.5 jobs annually commencing in year 8. Preparation of grazing land will result in a small amount of employment in grazing land improvement work prior to year 9 - 9.5 full-time equivalent employment positions in year 3 and 2.5 employment positions annually in years 4-7 inclusive.

As indicated in Chapter 4, there will be a small decrease in logging activity as a result of implementation of the Castle River I.R. Plan. This employment loss, associated with withdrawal of some land from commercial forest harvesting activity (see Chapter 4) will result in a loss of .19 full-time employment positions annually commencing in year 2. We have "rounded up" this loss to .5 lost jobs on Table 6.1 so that it is not lost in our quantitative analysis.

Implementation of the Castle River I.R.P. will result in approximately \$5,000 in gross trapping income being lost annually commencing in year 2. In Table 6.1, this has been interpreted as .5 full-time equivalent employment position annually. In reality, it is likely that three or four people will lose somewhere between \$1,000 and \$2,000 each annually in trapping income.

The Recreation-Serving Users Category refers to retailing and service provision directly to recreators in the Study Region. For example, recreation users purchasing fuel or groceries would generate activity identified under this category as would recreators purchasing services such as guiding, haircuts, or restaurant meals. Because the number of visitors and their expenditures is forecast to increase through the twenty-five year study period (see Chapter 2), employment in this category rises from 2 full-time employment positions that can be incrementally linked to the Castle River I.R.P. in year 2, to 5 positions in year 6, 8 positions in year 10, 12.5 positions in year 15, 13.5 positions in year 20, and 15 positions in year 25.

The Agricultural and Recreational Input Supply Category refers primarily to wholesale, retail, and to a lesser extent, service employment in the Study Region related to providing material and services needed for recreation facility construction and operations. Also included in this category is .5 of an employment position in year 3 of Scenario 1 related to Agricultural Input supply. Employment in this category, in the case of recreational facility construction and operations, is much lower than would be expected given the relatively substantial amounts of money that will be spent on recreational facility construction in the case of Scenario 1. This is because leakages are high; that is, most materials will be purchased from outside the Study Region. Note 6 (ii) in Appendix 2 describes the high leakages associated with this category. Input Supply employment will peak in year 10 at 4.5 full-time equivalent jobs; 3 full-time equivalent jobs will be created in year 15; at no other time during the 25 year time horizon associated with Scenario 1 does Input Supply employment exceed one full-time equivalent job annually.

Very little employment will be generated in the Induced Public Sector Category as a result of the Plan's implementation. This is primarily because overcapacity exists in the Region's health and educational systems at present (See Chapter 7). The only induced public sector employment that is likely to be generated will be .5 of a police officer from year 7 to 9 inclusive and 1 police officer from year 10 on.

Induced private sector activity (providing goods and services to people holding the newly created direct and linked jobs) peaks, in terms of employment, in years 15-17 inclusive, with 11.5 new employment positions being created. Induced private sector employment declines in year 18 to 7.5 jobs and further declines in year 21 to 6.5 jobs; the number of incremental jobs remains stable at 6.5 to year 25.

Overall, employment in all sectors peaks in year 15 with 129 jobs being attributed to the Plan.

There are two periods of high total employment associated incrementally with implementation of the Castle River I.R.P. The first is from years 10-13 inclusive, when employment will not dip below 108.5 full-time equivalent jobs and the second is from years 15-17 inclusive, when employment will not dip below 127 full-time equivalent jobs. In year 18 and onwards, a total full-time equivalent incremental employment associated with the Castle River I.R.P. will remain in the "high 80s" and "low 90s", never dropping below 86.5 or exceeding 94.5. Aggregate employment associated with the Castle River I.R.P. prior to year 10 will be low (never above 13.5 jobs) except in year 5 (27.5 jobs) when there will be a modest peak associated with recreation facility development and construction.

Tables 6.2 to 6.7 describe income associated with the Direct and Linked jobs that will be created. Farm (ranching), farm development (grazing land development), and trapping profits are assumed to be returns to labour rather than returns to capital. A net ranching income of \$20,000 is assumed to support one rancher and his/her associated household (see Chapter 3).

Tables 6.8 to 6.13 present information concerning Induced employment. Private Sector Induced employment is in the Tertiary (Service) Sector and results from local incremental spending by new construction workers, ranchers, park personnel and tourist/recreation sector personnel directly serving tourists/recreators. In the case of Castle River, because the impact of the above spending is relatively modest, no second round effects are induced, that is, impacts generated by further service sector workers being needed to service new (first round) service works. (Employment must be .5 of a full-time equivalent position or greater in magnitude in the second and subsequent rounds in calculating the multiplier to be noted and to continue the iteration).

Capital and operations spending by contractors, tourist/recreation entrepreneurs, government, ranchers, and local business people also contribute to the Induced Private Sector job pool by increasing employment in the wholesale, retail and service sectors.

TABLE 6.2
YEAR 2, SCENARIO 1: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

A. DIRECT EMPLOYMENT/RELATED INCOME

Public Sector:
Recreation Facility/Program Dev.
Recreation-Operating
Total Public Sector

Private Sector:
Recreation-Construction
Agriculture-Development
Agriculture-Operating
Forestry-Logging
Trapping
Total Private Sector

TOTAL DIRECT

B. LINKED EMPLOYMENT/RELATED INCOME

Private Sector:
Recreation-Servicing Users
Agriculture & Recreation
Input Supply
Total Private Sector

TOTAL LINKED

TOTAL DIRECT AND LINKED

Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
(0.5)		(0.5)	30,000 ¹¹	(15,000)		(15,000)
(0.5)		(0.5)	10,000 ¹²	(5,000)		(5,000)
(1.0)		(1.0)		(20,000)		(20,000)
(1.0)		(1.0)		(20,000)		(20,000)
2.0		2.0	14,000 ¹³	28,000		28,000
2.0		2.0		28,000		28,000
2.0		2.0				
1.0		1.0		8,000		8,000

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.3
YEAR 5, SCENARIO 1: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
A. DIRECT EMPLOYMENT/RELATED INCOME							
Public Sector:							
Recreation Facility/Program Dev.		11.0	11.0	28,500 ⁷		313,500	313,500
Recreation-Operating	1.5		1.5	19,500 ⁸	29,250	29,250	29,250
Total Public Sector	1.5	11.0	12.5		29,250	313,500	342,750
Private Sector:							
Recreation-Construction		5.0	5.0	28,500 ⁷		142,500	142,500
Agriculture-Development		2.5	2.5	30,000 ⁹		75,000	75,000
Agriculture-Operating	1.0		1.0	20,000 ¹⁰	20,000		20,000
Forestry-Logging	(0.5)		(0.5)	30,000 ¹¹	(15,000)		(15,000)
Trapping	(0.5)		(0.5)	10,000 ¹²	(5,000)		(5,000)
Total Private Sector	0	7.5	7.5		0	217,500	217,500
TOTAL DIRECT	1.5	18.5	20.0		29,250	531,000	560,250
B. LINKED EMPLOYMENT/RELATED INCOME							
Private Sector:							
Recreation-Servicing Users	4.0		4.0	14,000 ¹³	56,000		56,000
Agriculture & Recreation		0.5	0.5			7,000	7,000
Input Supply	4.0	0.5	4.5	14,000 ¹³	56,000	7,000	63,000
Total Private Sector	4.0	0.5	4.5				
TOTAL LINKED	4.0	0.5	4.5				
TOTAL DIRECT AND LINKED	5.5	19.0	24.5		85,250	538,000	623,250

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.4
YEAR 10, SCENARIO 1: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
A. DIRECT EMPLOYMENT/RELATED INCOME							
Public Sector:							
Recreation Facility/Program Dev.		11.0	11.0	28,500 ⁷		313,500	313,500
Recreation-Operating	41.5		41.5	19,500 ⁸	809,250		809,250
Total Public Sector	41.5	11.0	52.5		809,250	313,500	1,122,750
Private Sector:							
Recreation-Construction		35.5	35.5	28,500 ⁷		1,011,750	1,011,750
Agriculture-Development	1.5		1.5	20,000 ¹⁰	30,000		30,000
Agriculture-Operating	(0.5)		(0.5)	30,000 ¹¹	(15,000)		(15,000)
Forestry-Logging	(0.5)		(0.5)	10,000 ¹²	(5,000)		(5,000)
Trapping	0.5	35.5	36.0		10,000	1,011,750	1,021,750
Total Private Sector	42.0	46.5	88.5		819,250	1,325,250	2,144,500
TOTAL DIRECT							
B. LINKED EMPLOYMENT/RELATED INCOME							
Private Sector:							
Recreation-Servicing Users	8.0		8.0	14,000 ¹³	112,000		112,000
Agriculture & Recreation		4.5	4.5	14,000 ¹³		63,000	63,000
Input Supply	8.0	4.5	12.5		112,000	63,000	175,000
Total Private Sector	8.0	4.5	12.5		112,000	63,000	175,000
TOTAL LINKED							
TOTAL DIRECT AND LINKED	50.0	51.0	101.0		931,250	1,388,250	2,319,500

"Explanatory notes keyed to this table are found in Appendix 2."



YEAR 15, SCENARIO 1: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

TABLE 6.5

A. DIRECT EMPLOYMENT/RELATED INCOME	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
Public Sector:							
Recreation Facility/Program Dev.	63.5	7.0	7.0	28,500 ⁷		199,500	199,500
Recreation-Operating	63.5	7.0	63.5	19,500 ⁸	1,238,250		1,238,250
Total Public Sector			70.5		1,238,250	199,500	1,437,750
Private Sector:							
Recreation-Construction		30.0	30.0	28,500 ⁷		855,000	855,000
Agriculture-Development	1.5		1.5	20,000 ¹⁰	30,000		30,000
Agriculture-Operating	(0.5)		(0.5)	30,000 ¹¹	(15,000)		(15,000)
Forestry-Logging	(0.5)		(0.5)	10,000 ¹²	(5,000)		(5,000)
Trapping	0.5	30.0	30.5		10,000	855,000	865,000
Total Private Sector		37.0	101.0		1,248,250	1,054,500	2,302,750
TOTAL DIRECT	64.0						
B. LINKED EMPLOYMENT/RELATED INCOME							
Private Sector:							
Recreation-Servicing Users	12.5		12.5	14,000 ¹³	175,000		175,000
Agriculture & Recreation		3.0	3.0	14,000 ¹³		42,000	42,000
Input Supply	12.5	3.0	15.5		175,000	42,000	217,000
Total Private Sector							
TOTAL LINKED	12.5	3.0	15.5		175,000	42,000	217,000
TOTAL DIRECT AND LINKED	76.5	40.0	116.5		1,423,250	1,096,500	2,519,750

"Explanatory notes keyed to this table are found in Appendix 2."



TABLE 6.6
YEAR 20, SCENARIO 1: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
A. DIRECT EMPLOYMENT/RELATED INCOME							
Public Sector:							
Recreation Facility/Program Dev.		4.0	4.0	28,500 ⁷		114,000	114,000
Recreation-Operating	64.5		64.5	19,500 ⁸	1,257,750		1,257,750
Total Public Sector	64.5	4.0	68.5		1,257,750	114,000	1,371,750
Private Sector:							
Recreation-Construction		2.5	2.5	28,500 ⁷		71,250	71,250
Agriculture-Development	1.5		1.5	20,000 ¹⁰	30,000		30,000
Agriculture-Operating	(0.5)		(0.5)	30,000 ¹¹	(15,000)		(15,000)
Forestry-Logging	(0.5)		(0.5)	10,000 ¹²	(5,000)		(5,000)
Trapping	0.5	2.5	3.0		10,000	71,250	81,250
Total Private Sector		2.5	3.0			71,250	
TOTAL DIRECT	65.0	6.5	71.5		1,267,750	185,250	1,453,000
B. LINKED EMPLOYMENT/RELATED INCOME							
Private Sector:							
Recreation-Servicing Users	13.5		13.5	14,000 ¹³	189,000		189,000
Agriculture & Recreation		1.0	1.0	14,000 ¹³		14,000	14,000
Input Supply	13.5	1.0	14.5		189,000	14,000	203,000
Total Private Sector	13.5	1.0	14.5		189,000	14,000	203,000
TOTAL LINKED							
TOTAL DIRECT AND LINKED	78.5	7.5	86.0		1,456,750	199,250	1,656,000

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.7
YEAR 25, SCENARIO 1: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
A. DIRECT EMPLOYMENT/RELATED INCOME							
Public Sector:							
Recreation Facility/Program Dev.							
Recreation-Operating	64.5		64.5	19,500 ⁸	1,257,750		1,257,750
Total Public Sector	64.5		64.5		1,257,750		1,257,750
Private Sector:							
Recreation-Construction							
Agriculture-Development	1.5		1.5	20,000 ¹⁰	30,000		30,000
Agriculture-Operating	(0.5)		(0.5)	30,000 ¹¹	(15,000)		(15,000)
Forestry-Logging	(0.5)		(0.5)	10,000 ¹²	(5,000)		(5,000)
Trapping	0.5		0.5		10,000		10,000
Total Private Sector							
TOTAL DIRECT	65.0		65.0		1,267,750		1,267,750
B. LINKED EMPLOYMENT/RELATED INCOME							
Private Sector:							
Recreation-Servicing Users	15.0		15.0	14,000 ¹³	210,000		210,000
Agriculture & Recreation							
Input Supply		1.0	1.0	14,000 ¹³		14,000	14,000
Total Private Sector	15.0	1.0	16.0		210,000	14,000	224,000
TOTAL LINKED	15.0	1.0	16.0		210,000	14,000	224,000
TOTAL DIRECT AND LINKED	80.0	1.0	81.0		1,477,750	14,000	1,491,750

"Explanatory notes keyed to this table are found in Appendix 2."



TABLE 6.8
YEAR 2, SCENARIO 1: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase In Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	0					
Permanent: Recreation - Operating	0					
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	0 0					
Permanent: Agriculture - Operating Forestry - Logging Trapping	0 (0.5) (0.5)	0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	2.0 0	2 jobs to current residents				
D. INDUCED PUBLIC SECTOR	0					
E. INDUCED PRIVATE SECTOR	0					
F. TOTAL	<u>1.0</u>		<u>(0.5)</u>		<u>(1.5)</u>	<u>(0.5)</u>

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.9
YEAR 5, SCENARIO 1: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	11.0	9 jobs to current residents 2 jobs to in-migrants	2.0	1.9 persons/household 0.4 children/household	4	1
Permanent: Recreation - Operating	1.5	1.5 jobs to current residents				
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	5.0 2.5	5 jobs to current residents 2.5 jobs to current residents				
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.0 (0.5) (0.5)	1.0 job to current resident 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	4.0 0.5	4 jobs to current residents 0.5 job to current residents				
D. INDUCED PUBLIC SECTOR	0					
E. INDUCED PRIVATE SECTOR	3.0*	3.0 jobs to current residents				
F. TOTAL	<u>27.5</u>		<u>1.5</u>		<u>2.5</u>	<u>0.5</u>

*Explanatory notes keyed to this table are found in Appendix 2.

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$623,250, there would be \$336,555 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 3.0 jobs created.



TABLE 6.10
YEAR 10, SCENARIO 1: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	11.0	9 jobs to current residents 2 jobs to in-migrants	2	1.9 persons/household 0.4 children/household	4	1
Permanent: Recreation - Operating	41.5	21.5 jobs to current residents 20 jobs to in-migrants	20	3.4 persons/household 1.4 children/household	68	28
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	35.5 0	20.0 jobs to current residents 15.5 jobs to in-migrants	15.5	1.9 persons/household 0.4 children/household		
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.5 (0.5) (0.5)	1.5 jobs to current residents 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	8.0 4.5	7 jobs to current residents 1 job to in-migrants 4.5 jobs to current residents	1.0	3.4 persons/household 1.4 children/household	3.5	1.5
D. INDUCED PUBLIC SECTOR	1.0	1 job to in-migrants	1.0	3.4 persons/household 1.4 children/household	3.5	1.5
E. INDUCED PRIVATE SECTOR	10.5*	8.5 jobs to current residents 2 jobs to in-migrants	2.0	3.4 persons/household 1.4 children/household	7.0	3.0
F. TOTAL	<u>112.5</u>		<u>41.0</u>		<u>84.5</u>	<u>34.5</u>

*Explanatory notes keyed to this table are found in Appendix 2."

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$2,319,500, there would be \$1,252,530 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 10.5 jobs created.



TABLE 6.11
YEAR 15, SCENARIO 1: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase In Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	7.0	6 jobs to current residents 1 job to in-migrants	1	1.9 persons/household 0.4 children/household	2	0.5
Permanent: Recreation - Operating	63.5	33.5 jobs to current residents 30 jobs to in-migrants	30	3.4 persons/household 1.4 children/household	102	42
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction	30.0	20 jobs to current residents 10 jobs to in-migrants	10	1.9 persons/household 0.4 children/household	19	4.0
Agriculture - Development	0					
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.5 (0.5) (0.5)	1.5 jobs to current residents 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	12.5 3	10.5 jobs to current residents 2 jobs to in-migrants 3 jobs to current residents	2	3.4 persons/household 1.4 children/household	7	3
D. INDUCED PUBLIC SECTOR	1.0	1 job to in-migrants	1	3.4 persons/household 1.4 children/household	3.5	1.5
E. INDUCED PRIVATE SECTOR	11.5*	9.5 jobs to current residents 2 jobs to in-migrants	2	3.4 persons/household 1.4 children/household	7	3
F. TOTAL	<u>129</u>		<u>45.5</u>		<u>139.0</u>	<u>53.5</u>

*Explanatory notes keyed to this table are found in Appendix 2."

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$2,519,750, there would be \$1,360,665 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 11.5 jobs created.



TABLE 6.12
YEAR 20, SCENARIO 1: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	4	3.0 jobs to current residents 1 job to in-migrants	1	1.9 persons/household 0.4 children/household	2	0.5
Permanent: Recreation - Operating	64.5	34.5 jobs to current residents 30 jobs to in-migrants	30	3.4 persons/household 1.4 children/household	102	42
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	2.5 0	2.5 jobs to current residents				
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.5 (0.5) (0.5)	1.5 jobs to current residents 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	13.5 1.0	11.5 jobs to current residents 2 jobs to in-migrants 1 job to current residents	2	3.4 persons/household 1.4 children/household	7	3
D. INDUCED PUBLIC SECTOR	1.0	1 job to in-migrants	1	3.4 persons/household 1.4 children/household	3.5	1.5
E. INDUCED PRIVATE SECTOR	7.5*	6.5 jobs to current residents 1 job to in-migrants	1	3.4 persons/household 1.4 children/household	3.5	1.5
F. TOTAL	<u>94.5</u>		<u>34.5</u>		<u>116.5</u>	<u>48.0</u>

*Explanatory notes keyed to this table are found in Appendix 2.

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$1,656,000, there would be \$894,240 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 7.5 jobs created.

TABLE 6.13
YEAR 25, SCENARIO 1: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	0					
Permanent: Recreation - Operating	64.5	34.5 jobs to current residents 30 jobs to in-migrants	30	3.4 persons/household 1.4 children/household	102	42
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	0 0					
Permanent: Agriculture - Operating	1.5	1.5 jobs to current residents				
Forestry - Logging	(0.5)	0.5 job lost result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
Trapping	(0.5)	0.5 job lost does not result in out-migration				
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users	15.0	13 jobs to current residents 3 jobs to in-migrants	3	3.4 persons/household 1.4 children/household	10	4
Agriculture & Recreation Input Supply	1.0	1 job to current residents				
INDUCED PUBLIC SECTOR	1.0	1 job to in-migrants	1	3.4 persons/household 1.4 children/household	3.5	1.5
INDUCED PRIVATE SECTOR	6.5*	5.5 jobs to current residents 1 job to in-migrants	1	3.4 persons/household 1.4 children/household	3.5	1.5
F. TOTAL	88.5		34.5		117.5	48.5

*Explanatory notes keyed to this table are found in Appendix 2.

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$1,491,750, there would be \$805,545 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 6.5 jobs created.



Additional Public Sector Induced employment is mainly the product of population increase. As noted earlier, the population increases that will be generated by implementation of the Plan will induce virtually no Public Sector Induced Employment because of existing overcapacity in educational and health systems in the Study Region. The extra police officer that will be required (the only Public Sector Induced employment that will be attributable to the Castle River I.R.P.) is necessary because of increased recreational activity rather than because of local population increases per se.

As can be noted in the referenced tables, population increments generated by implementation of the Plan will be modest. In year 10, the population increase in the Study Region attributable to the Castle River I.R.P. will be 84.5, in year 15 it will be 139, in year 20 it will be 116.5 and in year 25 it will be 117.5.

In undertaking demographic analysis, we have separated out children as a separate category because of the need for a child cohort for school planning, social planning, and social impact purposes.

Column #2 in Tables 6.8 to 6.13 describes the allocation of jobs to current residents of the Study Region versus in-migrants (to the Region). This "fitting" of new employment positions to individuals was based on judgements made by the analysts in the context of current unemployment levels in the Study Region and current skill levels of the Study Region's populace. For example, based on June, 1984 data prepared by the Alberta Tourism and Small Business, there were 60 people unemployed in Pincher Creek (10 male, 50 female) and 200 unemployed in the Municipality of Crowsnest Pass (100 male, 100 female). The higher unemployment rate in Crowsnest Pass relative to Pincher Creek reflects the poor health of the local economy in the former locale. (There are no operating coal mines in the Crowsnest Pass area of Alberta at present; hence the traditional mainstay of the local economy is dead.) Given this situation, it can be expected that to the extent that locals take jobs created, there will be significant response from people

in Crowsnest Pass. (Pincher Creek and the Municipality of Crowsnest Pass are the only demographically significant settlements in the Study Region.)

Because of the very depressed state of the local economy in the Crowsnest Pass, any employment creation as a result of the Castle River I.R.P. will be socially significant. However, it should be remembered that much of the employment creation will be in construction and hence temporary while Private Sector non-construction tourist/recreation service employment pays much less than the coal mining employment which local residents are accustomed to earning. Also, recreation sector operating employment involves permanent or contractual civil service work and may be difficult for local residents to access given credential requirements, etc.

Column #3 in Tables 6.8 to 6.13 describes Regional household formation based on the in-migration stream generated. Population increases (columns #5 and #6) are based on the application of certain demographic assumptions (column #4) to the data. As is evident, these assumptions vary widely with different population groups. For example, as a statistical generalization, construction workers tend to have fewer children (and spouses), than ranchers or recreational operating personnel.

Private Sector Induced employment is based on a multiplier of 1.54. This multiplier was constructed by identifying a mix of goods/services in each category which, as a statistical generalization, would be purchased locally.⁴ Based on assumptions about leakages, the multiplier was then deduced. (Detailed information concerning the methodology used to generate the multiplier is available from the consultants).

Based on our analysis, approximately two-thirds of all new employment created will accrue to existing Study Region residents (see tables 6.8 to 6.13 for exact breakdowns). The Induced (Row 15 in Table 6.1), Recreation Servicing (Row 11 in Table 6.1) and Input Supply (Row 12 in Table 6.1) employment created will be largely based in Pincher Creek and Crowsnest Pass

rather than in the Castle River I.R.P. Sub-Region. However, there is a chance that a small amount of Private Sector Induced and Recreation Servicing employment will be created in the Hamlet of Beaver Mines. This could occur if the West Castle Ski development expansion occurs as planned and appropriate planning approvals and private sector interests coincide to result in development of some tourist/recreation services in or around Beaver Mines.

Although recreation facility construction and grazing lands development activity will occur in the Castle River I.R. Sub-Region, it is highly probable that the majority of the workers will live in Crowsnest Pass or Pincher Creek. Similarly, recreational personnel in the Public Sector are likely to live in Pincher Creek or Crowsnest Pass.

In summary, in terms of spatial incidence; employment, income and demographic impacts will be much more oriented to Pincher Creek and Crowsnest Pass than to the Castle River I.R. Sub-Region itself. However, there could be some recreation servicing activity at Beaver Mines and a few rural households are likely to obtain jobs generated by implementation of the plan. Ranching activity, which will be minor in magnitude, would result in ranchers residing within the Castle River I.R. Sub-Region proper.

Overall, incremental employment will be distributed to existing Study Region residents, in terms of current place of residence, spatially approximately as follows: 20% to existing residents of the Castle River I.R. Sub-Region, 40% to existing residents of the Crowsnest Pass area, and 40% to existing residents of the Pincher Creek area. Employment associated with tourist servicing will locate to a greater extent in Pincher Creek than in the Crowsnest Pass area because Pincher Creek is more accessible in terms of road quality and distance to most parts of the Castle River I.R. Sub-Region and because of its better location to intercept Calgary traffic. On the other hand, it is probable that a larger percentage of recreational facility construction and grazing land improvement labour will come from the

Crowsnest Pass area rather than from the Pincher Creek area because of the larger unemployed labour source in the Crowsnest Pass area.

Incremental employment will be distributed to in-migrants, in terms of where they will live in the Study Area, approximately as follows: 5% to the Castle River I.R. Sub-Region, 55% to Pincher Creek, and 40% to Crowsnest Pass. More in-migrants will be attracted to Pincher Creek than to Crowsnest Pass because more tourist/recreational user service activity will be located there. On the other hand, a significant number of in-migrants will be attracted to Crowsnest Pass because of the lower cost of housing in that Municipality.

Table 6.14 describes Regional income impacts of the proposed Castle River I.R.P. given Scenario 1 assumptions. Table 6.15 illustrates that in the peak activity years (year 15-17 inclusive), implementation of the Plan will result in \$5,164,698 per year in additional income to individuals and institutions in the Study Region. Incremental Regional Income will fall to approximately 3.3 million dollars in years 18-20 inclusive then will fall again to approximately 2.9 million dollars from year 21 onwards.

There will be an earlier substantial increase in Incremental Regional Income in years 10-13 inclusive when incremental income associated with the Castle River I.R.P. will be \$4,737,679 annually. Income impacts associated with the Castle River I.R.P. will be very modest prior to year 10 except for a noticeable sub-peak in year 5 when \$1,142,226 in Incremental Regional Income will be associated with the Castle River I.R.P. Otherwise, prior to year 10, Regional income effects will not exceed \$571,000 annually.

Not surprisingly, income impacts follow a path very similar to employment impacts. This is largely because in an isolated Region, the majority of socio-economic benefits from a plan such as the Castle River I.R.P. are in the form of employment benefits rather than profits (returns to capital).



TABLE 6.14
SCENARIO 1: INCOME MULTIPLIER

	YEAR 2	YEAR 5	YEAR 10	YEAR 15	YEAR 20	YEAR 25
Direct and Linked Wages Public Sector Induced Wages	8,000 0	623,250 42,000	2,319,500 175,000	2,519,750 189,000	1,656,000 140,000	1,491,750 126,000
TOTAL WAGES (1)	8,000	665,250	2,494,500	2,708,750	1,796,000	1,617,750
RETURNS TO CAPITAL (2) ^{15, 16}	7,000	72,000	425,000	388,000	107,000	91,000
Family Allowance ¹⁷ Canada and Old Age Pension ¹⁸ U.I.C. ¹⁹	(180) (720) (1,755)	180 1,200 2,925	12,420 40,560 98,865	19,260 66,720 162,630	17,280 55,920 136,350	17,460 56,400 137,475
TOTAL INDIVIDUAL TRANSFERS (3)	(2,655)	4,305	151,845	248,610	209,505	211,335
TRANSFERS TO LOCAL GOVERNMENT (4) ¹⁹	(90)	150	5,070	8,340	6,990	7,050
TOTAL (1 + 2 + 3 + 4)	12,255	741,705	3,076,415	3,353,700	2,119,495	1,927,135
LOCAL MULTIPLIER	1.54	1.54	1.54	1.54	1.54	1.54
TOTAL INCOME BENEFIT TO THE REGION	18,873	1,142,226	4,737,679	5,164,698	3,264,022	2,967,788

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.15
REGIONAL INCOME GENERATED BY PLAN INITIATIVES²¹
(1985 Dollars)

<u>Year</u>	<u>Regional Income</u>
1	\$ 0
2	18,873
3	436,000
4	249,000
5	1,142,226
6	498,000
7	571,000
8	529,000
9	529,000
10	4,737,679
11	4,737,679
12	4,737,679
13	4,737,679
14	2,737,000
15	5,164,598
16	5,164,598
17	5,164,598
18	3,264,022
19	3,264,022
20	3,264,022
21	2,967,788
22	2,967,788
23	2,967,788
24	2,967,788
25	2,967,788
26	2,967,788
27	2,967,788
28	2,967,788
29	2,967,788
 TOTAL	 \$80,624,555
 NPV 5%	 \$34,800,180
NPV 10%	\$17,056,161

The income impact figures presented are indicative only and may be conservative. Decision-makers should compare these income figures with the costs of implementing the Plan before proceeding with the proposed Plan. In addition, societal costs and benefits should be considered.

We distributed the Regional income impact results to every year, from year 1 to year 30 (because of time and resource constraints, employment and income analyses was performed for years 2, 5, 10, 15, 20, and 25 only for this scenario) with entries for intervening years being estimated from the employment information presented in Table 6.1. Table 6.15 describes the distribution used. Ideally, one would calculate the Regional income impact of the Castle River I.R. Plan for every year to year 25 or 30. The methodology used is not as accurate as one based on actual calculation of the Regional income impact for every year, but the results should be accurate within a 15% error band. (The consultants have the raw data available to directly calculate the employment and/or income impact for any year from one to thirty if more accurate information is needed in the future).

Using the Symphony spreadsheet computer program, the Present Value of the income stream for Scenario 1 was calculated to be \$34,800,180 over thirty years at a 5% discount rate and \$17,056,161 at a 10% discount rate⁵ (see Table 6.15).

6.6 Scenario 2

Scenario 2 is based on the assumption that no new recreational facilities will be constructed in the Castle River Sub-Region by the Alberta Recreation and Parks Department after 1990 but that the Alberta Forest Service will construct a limited number of recreational facilities in the Castle River Sub-Region after 1990. Details concerning the proposed activities associated with Scenario 2 are described in Chapter 2.

Scenario 2 also assumes that existing recreational facilities (both private and public sector) in the Sub-Region will continue to operate. It is assumed that new recreational facilities will be developed and operated by the Public Sector; it is further assumed that the Alberta Forest Service will directly undertake construction work. However, if the same scale and type of recreational development were to be undertaken by the Private Sector, the employment, income, and demographic impacts on the Study Region would not be appreciably different than if the work were undertaken based on Public Sector funding, management and construction.

The same Study Region for tracing impacts is used as for Scenario 1. As was the case for Scenario 1, the employment, income and demographic impacts identified are those that will result from the implementation of the Castle River I.R.P., as interpreted in previous chapters of this document, except that it is assumed recreational facility development by the Public Sector will not occur after year 1990 except for limited Alberta Forest Service activities. As was the case for Scenario 1, this analysis does not trace impacts from other developments, including other tourism/recreational developments, that may occur in the Study Region during the 1986-2010 period.

Table 6.16 describes employment that is likely to be realized if the Scenario 2 variant of the Castle River I.R.P. is implemented, by year, to year 25. Table 6.16 assumes that year 1 is 1986 (that is, implementation of the Plan commences in that year) so that year 25 is 2010. After year 25, if no changes are made in the Plan, employment incrementally traceable to the Castle River I.R.P. will not change significantly in terms of the number and mix of employment positions.

Scenario 2, overall, generates very little impact on the Region, in employment, income or demographic terms. The most significant type of employment creation traceable to the Plan will be in the Private Sector linked to servicing visitors in terms of goods and personal services, e.g., food, automobile service, accommodation, restaurant service. Row 11 in



Table 6.16 illustrates that employment in this sub-sector will reach a high of 11.5 full-time equivalent jobs incrementally attributable to the Plan in year 15 and will continue at that level until the end of the study period. The growth of employment in the Private Sector, servicing recreators category (Row 11 in Table 6.16) can be attributed to the protection emphasis of the Castle River I.R.P. combined with forecast growth in Alberta's population, growth in tourist arrivals in Alberta, and overall growth in Tourism as an industry. (Tourism will be the number one industry in the world in dollar value by the year 2001).

A somewhat significant source of employment attributable to the Scenario 2 interpretation of the Castle River I.R.P. will be in the Public Sector Facility and Program Development category (Row 1 in Table 6.16). This employment is bunched in 4 years - 11.5 jobs in year 5 (the peak), 4.5 jobs in year 10 and 15, and 5.5 jobs in year 20. In addition, in year 4, .5 job will be created associated with water quality analysis. However, because the Alberta Forest Service will implement facility development itself, no private sector construction employment (row 4 in Table 6.16) will be created after year 1990. (Three jobs will be incrementally attributable to the Scenario 2 interpretation of the Castle River I.R.P. in year 1990, the last year that Alberta Recreation and Parks will be involved in recreation facility construction work in the Sub-Region according to Scenario 2 assumptions. The three jobs will be associated with private sector construction hiring by Alberta Recreation and Parks in 1990.)

Recreation operating employment in the Public Sector (row 2 in Table 6.16), although modest, will gradually increase as the Alberta Forest Service constructs some new recreational facilities over the study period. Such employment will grow from one job in years 5-9 inclusive, to 2 jobs in years 10-14 inclusive, to 3.5 jobs in years 15-19 inclusive, and to 4.5 jobs from year 20 onwards.

Employment impacts in terms of Agricultural Development (grazing land improvement), Agricultural Operating (ranching), trapping, and forestry (logging), are likely to be the same as for Scenario 1.

The only incremental Induced Public Sector employment that will be generated by Scenario 2 is .5 police officer from year 7 onwards. This police officer will be needed to service increased recreational activity rather than local population growth per se.

Scenario 2 will result in limited Induced Private Sector incremental employment. This is because little incremental employment will be generated in the Direct and Linked categories; hence, there will be few additional local people with jobs in the Direct and Linked categories demanding retailing and personal services. Retail and service employment in the Induced Private Sector peaks at 2 jobs in years 5 and 20. The induced retail and service category will account for 1 incremental full-time equivalent job in years 6-14 inclusive and from year 21 onwards. There will be 1.5 full-time equivalent jobs created per year in this category in years 16-19 inclusive. No incremental employment creation will occur in the Induced Retail and Service category before year 5.

Overall employment creation attributable to the Plan is minimal given Scenario 2 assumptions. Overall incremental employment peaks at 24.5 jobs in year 20, 24 jobs in year 5, and 22 jobs in year 15. Aside from these peaks, aggregate employment attributable to the Castle River I.R.P. (Scenario 2) remains between 9.5 and 18 incremental jobs from year 6 onwards.

The peaks in years 5, 15 and 20 (and a lesser one in year 10) can be accounted for by Alberta Forest Service recreational facility development in those years. Development of recreational facilities by the Alberta Forest Service will be done in one year "spurts". Aggregate employment growth in non-peak years can be attributed to increased recreational use of the

Sub-Region resulting in more demand for recreationally oriented goods and services.

Tables 6.17 to 6.22 describe income associated with Direct and Linked jobs that will be created. The assumptions used in developing these tables were the same as for Scenario 1.

Tables 6.23 to 6.28 present information concerning Induced employment. The text analysing Scenario 1 (Section 6.5) describes the assumptions used in generating tables 6.23 to 6.28. As was the case in Scenario 1, because the impact of "first round" consumer spending by new job holders is modest, there are no significant "second or subsequent round" effects.

Additional Public Sector Induced employment is generally the product of population increase. As described below, demographic increases that can be attributed to Scenario 2 are very modest, hence, there is likely to be no increased Public Sector Induced employment associated with Scenario 2 with the exception of .5 police officer described above. This lack of impact in this sector is further explained by the fact that there is substantial overcapacity in the educational and health systems of the Study Region.

As can be noted in Tables 6.23 to 6.28, population increments generated by the plan will be extremely modest, even by the standards of Scenario 1. At no time will Scenario 2 contribute to a population increase in excess of 9 people (years 15 and 20). From year 10, the Plan will generate a demographic increase in the Study Region of 5.5 people; in year 25, 7 people. In undertaking demographic analysis, we have separated out children as a separate category because of the need for a child cohort for school planning, social planning, and social impact purposes.

Column 2 in Tables 6.23 to 6.28 describes the allocation of jobs to current residents of the Study Region versus in-migrants (to the Study Region). This "fitting" of new employment positions to individuals was based on judgements made by the analysis in the context of current unemployment

TABLE 6.17
YEAR 2, SCENARIO 2: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
A. DIRECT EMPLOYMENT/RELATED INCOME							
Public Sector:							
Recreation Facility/Program Dev.							
Recreation-Operating							
Total Public Sector							
Private Sector:							
Recreation-Construction							
Agriculture-Development							
Forestry-Operating							
Trapping	(0.5)		(0.5)	30,000 ¹¹	(15,000)		(15,000)
Total Private Sector	(0.5)		(0.5)	10,000 ¹²	(5,000)		(5,000)
	(1.0)		(1.0)		(20,000)		(20,000)
TOTAL DIRECT	(1.0)		(1.0)		(20,000)		(20,000)
B. LINKED EMPLOYMENT/RELATED INCOME							
Private Sector:							
Recreation-Servicing Users	2.0		2.0	14,000 ¹³	28,000		28,000
Agriculture & Rec. Input Supply	2.0		2.0		28,000		28,000
Total Private Sector	2.0		2.0		28,000		28,000
TOTAL LINKED	1.0		1.0		8,000		8,000
TOTAL DIRECT AND LINKED							

"Explanatory notes keyed to this table are found in Appendix 2."



TABLE 6.18
YEAR 5, SCENARIO 2: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

A. DIRECT EMPLOYMENT/RELATED INCOME						
	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income
Public Sector:						
Recreation Facility/Program Dev.						
Recreation-Operating	1.0	11.5	11.5	24,000 ⁷	19,500	276,000
Total Public Sector	1.0	11.5	12.5	19,500 ⁸	19,500	276,000
Private Sector:						
Recreation-Construction		3.0	3.0	24,000 ⁷		72,000
Agriculture-Development		2.5	2.5	30,000 ⁹		75,000
Forestry-Logging	(1.0)	(1.0)	(1.0)	20,000 ¹⁰	20,000	20,000
Trapping	(0.5)	(0.5)	(0.5)	30,000 ¹¹	(15,000)	(15,000)
Total Private Sector	0	5.5	5.5	10,000 ¹²	(5,000)	147,000
TOTAL DIRECT	1	17.0	18.0		19,500	442,500
B. LINKED EMPLOYMENT/RELATED INCOME						
Private Sector:						
Recreation-Servicing Users	4.0	4.0	4.0	14,000 ¹³	56,000	56,000
Agriculture & Rec. Input Supply	4.0	4.0	4.0		56,000	56,000
Total Private Sector	4.0	4.0	4.0		56,000	56,000
TOTAL LINKED	5.0	17.0	22.0		75,500	498,500
TOTAL DIRECT AND LINKED						

^aExplanatory notes keyed to this table are found in Appendix 2.



TABLE 6.19
YEAR 10, SCENARIO 2: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

A. DIRECT EMPLOYMENT/RELATED INCOME						
	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income
Public Sector:						
Recreation Facility/Program Dev.						
Recreation-Operating	2.0	4.5	4.5	24,000 ⁷	39,000	108,000
Total Public Sector	2.0	4.5	6.5	19,500 ⁸	39,000	108,000
Private Sector:						
Recreation-Construction						
Agriculture-Development	1.5		1.5	20,000 ¹⁰	30,000	30,000
Agriculture-Operating	(0.5)		(0.5)	30,000 ¹¹	(5,000)	(15,000)
Forestry-Logging	(0.5)		(0.5)	10,000 ¹²	(5,000)	(5,000)
Trapping	0.5		0.5	10,000	10,000	10,000
Total Private Sector	0.5		0.5		10,000	10,000
TOTAL DIRECT	2.5	4.5	7.0		49,000	108,000
B. LINKED EMPLOYMENT/RELATED INCOME						
Private Sector:						
Recreation-Servicing Users	6.0		6.0	14,000 ¹³	112,000	112,000
Agriculture & Rec. Input Supply	8.0		8.0	112,000	112,000	112,000
Total Private Sector	8.0		8.0		112,000	112,000
TOTAL LINKED	8.0		8.0		112,000	112,000
TOTAL DIRECT AND LINKED	10.5	4.5	15.0		161,000	264,000

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.20
YEAR 15, SCENARIO 2: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

A. DIRECT EMPLOYMENT/RELATED INCOME							
	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
Public Sector:							
Recreation Facility/Program Dev.		4.5	4.5	24,000 ⁷		108,000	108,000
Recreation-Operating	3.5		3.5	19,500 ⁸	68,250		68,250
Total Public Sector	3.5	4.5	8.0		68,250	108,000	176,250
Private Sector:							
Recreation-Construction							
Agriculture-Development	1.5		1.5	20,000 ¹⁰	30,000		30,000
Agriculture-Operating	(0.5)		(0.5)	30,000 ¹¹	(15,000)		(15,000)
Forestry-Logging	(0.5)		(0.5)	10,000 ¹²	(5,000)		(5,000)
Trapping	0.5		0.5	10,000	10,000		10,000
Total Private Sector	0.5		0.5		10,000		10,000
TOTAL DIRECT	4.0	4.5	8.5		78,250	108,000	186,250
B. LINKED EMPLOYMENT/RELATED INCOME							
Private Sector:							
Recreation-Servicing Users	11.5		11.5	14,000 ¹³	161,000		161,000
Agriculture & Rec. Input Supply	11.5		11.5		161,000		161,000
Total Private Sector	11.5		11.5		161,000		161,000
TOTAL LINKED	11.5		11.5		161,000		161,000
TOTAL DIRECT AND LINKED	15.5	4.5	20.0		239,250	108,000	347,250

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.21
YEAR 20, SCENARIO 2: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

A. DIRECT EMPLOYMENT/RELATED INCOME						
	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income
Public Sector:						
Recreation Facility/Program Dev.	4.5	5.5	5.5	24,000 ⁷		132,000
Recreation-Operating	4.5	5.5	4.5	19,500 ⁸	87,750	87,750
Total Public Sector			10.0		87,750	132,000
Private Sector:						
Recreation-Construction						
Agriculture-Development	1.5		1.5	20,000 ¹⁰	30,000	30,000
Agriculture-Operating	(0.5)		(0.5)	30,000 ¹¹	(15,000)	(15,000)
Forestry-Logging	(0.5)		(0.5)	10,000 ¹²	(5,000)	(5,000)
Trapping	0.5		0.5		10,000	10,000
Total Private Sector						
TOTAL DIRECT	5.0	5.5	10.5		97,750	132,000
B. LINKED EMPLOYMENT/RELATED INCOME						
Private Sector:						
Recreation-Servicing Users	11.5		11.5	14,000 ¹³	161,000	161,000
Agriculture & Rec. Input Supply	11.5		11.5		161,000	161,000
Total Private Sector						
TOTAL LINKED	11.5		11.5		161,000	161,000
TOTAL DIRECT AND LINKED	16.5	5.5	22.0		258,750	393,000

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.22
YEAR 25, SCENARIO 2: TOTAL DIRECT/LINKED EMPLOYMENT AND RELATED INCOME

	Permanent Employment	Temporary Employment	Total Employment	Income/ Position	Permanent Employment Income	Temporary Employment Income	Total Employment Income
A. DIRECT EMPLOYMENT/RELATED INCOME							
Public Sector:							
Recreation Facility/Program Dev.	4.5		4.5		87,750		87,750
Recreation-Operating	4.5		4.5	19,500 ⁸	87,750		87,750
Total Public Sector							
Private Sector:							
Recreation-Construction	1.5		1.5		30,000		30,000
Agriculture-Development	(0.5)		(0.5)	20,000 ¹⁰	(15,000)		(15,000)
Agriculture-Operating	(0.5)		(0.5)	30,000 ¹¹	(5,000)		(5,000)
Forestry-Logging	0.5		0.5	10,000 ¹²	10,000		10,000
Trapping							
Total Private Sector							
TOTAL DIRECT	5.0		5.0		97,750		97,750
B. LINKED EMPLOYMENT/RELATED INCOME							
Private Sector:							
Recreation-Servicing Users	11.5		11.5	14,000 ¹³	161,000		161,000
Agriculture & Rec. Input Supply	11.5		11.5		161,000		161,000
Total Private Sector							
TOTAL LINKED	11.5		11.5		161,000		161,000
TOTAL DIRECT AND LINKED	16.5		16.5		258,750		258,750

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.23
YEAR 2, SCENARIO 2: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	0					
Permanent: Recreation - Operating	0					
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	0 0					
Permanent: Agriculture - Operating Forestry - Logging Trapping	0 (0.5) (0.5)	0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	2.0 0	2 jobs to current residents				
D. INDUCED PUBLIC SECTOR	0					
E. INDUCED PRIVATE SECTOR	0					
F. TOTAL	1.0		(0.5)		(1.5)	(0.5)

Explanatory notes keyed to this table are found in Appendix 2.

TABLE 6.24
YEAR 5, SCENARIO 2: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	11.5	9.5 jobs to current residents 2.0 jobs to in-migrants	2	1.9 persons/household 0.4 children/household	4	1
Permanent: Recreation - Operating	1	1 job to current residents				
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	3.0 2.5	3.0 jobs to current residents 2.5 jobs to current residents				
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.0 (0.5) (0.5)	1.0 job to current residents 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	4.0 0 0	4 jobs to current residents				
D. INDUCED PUBLIC SECTOR	2.0*	2 jobs to current residents			2.5	0.5
E. INDUCED PRIVATE SECTOR	24.0		1.5			
F. TOTAL						

Explanatory notes keyed to this table are found in Appendix 2.

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$498,500, there would be \$269,190 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 2 jobs created.



TABLE 6.25
YEAR 10, SCENARIO 2: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	4.5	3.5 jobs to current residents 1.0 job to in-migrants	1	1.9 persons/household 0.4 children/household	2	.5
Permanent: Recreation - Operating	2.0	2.0 jobs to current residents				
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	0 0					
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.5 (0.5) (0.5)	1.5 jobs to current residents 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	8.0 0	7 jobs to current residents 1 job to in-migrants	1.0	3.4 persons/household 1.4 children/household	3.5	1.5
D. INDUCED PUBLIC SECTOR	0.5	0.5 job to in-migrants	0.5	3.4 persons/household 1.4 children/household	1.5	0.5
E. INDUCED PRIVATE SECTOR	1.0*	0.5 job to current residents				
F. TOTAL	16.5		2.0		5.5	2.0

Explanatory notes keyed to this table are found in Appendix 2.

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$269,000, there would be \$415,260 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 1 job created.

TABLE 6.26
YEAR 15, SCENARIO 2: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	4.5	3.5 jobs to current residents 1.0 job to in-migrants	1	1.9 persons/household 0.4 children/household	2	0.5
Permanent: Recreation - Operating	3.5	3.5 jobs to current residents				
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	0 0					
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.5 (0.5) (0.5)	1.5 jobs to current residents 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	11.5 0	9.5 jobs to current residents 2.0 jobs to in-migrants	2.0	3.4 persons/household 1.4 children/household	7.0	3.0
D. INDUCED PUBLIC SECTOR	0.5	0.5 job to in-migrants	0.5	3.4 persons/household 1.4 children/household	1.5	0.5
E. INDUCED PRIVATE SECTOR	1.5*	1.5 jobs to current residents				
F. TOTAL	22.0		3.0		9.0	3.5

Explanatory notes keyed to this table are found in Appendix 2.

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$347,250, there would be \$187,515 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 1.5 jobs created.

TABLE 6.27
YEAR 20, SCENARIO 2: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	5.5	4.5 jobs to current residents 1.0 job to in-migrants	1.0	1.9 persons/household 0.4 children/household	2.0	0.5
Permanent: Recreation - Operating	4.5	4.5 jobs to current residents				
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	0 0					
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.5 (0.5) (0.5)	1.5 jobs to current residents 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	11.5 0	9.5 jobs to current residents 2 jobs to current in-migrants	2.0	3.4 persons/household 1.4 children/household	7.0	3.0
D. INDUCED PUBLIC SECTOR	0.5	0.5 job to in-migrants	0.5	3.4 persons/household 1.4 children/household	1.5	0.5
E. INDUCED PRIVATE SECTOR	2.0*	2.0 jobs to current residents				
F. TOTAL	<u>24.5</u>		<u>3.0</u>		<u>9.0</u>	<u>3.5</u>

*Explanatory notes keyed to this table are found in Appendix 2.

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$390,750, there would be \$211,005 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 2 jobs created.

TABLE 6.28
YEAR 25, SCENARIO 2: EMPLOYMENT AND DEMOGRAPHIC IMPACTS

	Column 1 Employment Created	Column 2 Employment Recipients	Column 3 Regional Household Formation Through In-Migration	Column 4 Demographic Assumptions	Column 5 Total Population Increase	Column 6 Increase in Number of Children
A. DIRECT PUBLIC SECTOR						
Temporary: Recreation - Facility/ Program Development	0					
Permanent: Recreation - Operating	4.5	4.5 jobs to current residents				
B. DIRECT PRIVATE SECTOR						
Temporary: Recreation - Construction Agriculture - Development	0 0					
Permanent: Agriculture - Operating Forestry - Logging Trapping	1.5 (0.5) (0.5)	1.5 jobs to current residents 0.5 job lost results in out-migration 0.5 job lost does not result in out-migration	(0.5)	2.5 persons/household 0.7 children/household	(1.5)	(0.5)
C. LINKED PRIVATE SECTOR						
Permanent: Recreation - Servicing Users Agriculture & Recreation Input Supply	11.5 0	9.5 jobs to current residents 2.0 jobs to current in-migrants	2.0	3.4 persons/household 1.4 children/household	7.0	3.0
D. INDUCED PUBLIC SECTOR	0.5	0.5 job to in-migrants	0.5	3.4 persons/household 1.4 children/household	1.5	0.5
E. INDUCED PRIVATE SECTOR	1.0*	1.0 jobs to current residents				
F. TOTAL	18.0		2.0		7.0	3.0

Explanatory notes keyed to this table are found in Appendix 2.

* Based on a regional multiplier of 1.54 and total income generated by direct and linked employment of \$258,750, there would be \$139,725 induced in the private sector. Assuming one job is created for every \$120,000 in sales generated in the private sector, there would be 1 job created.



levels in the Study Region and current skill levels of the Study Region's populace. Recent unemployment levels in the two main communities in the Study Region are described in the text associated with Scenario 1 (Section 6.5).

Column 3 in Tables 6.23 to 6.28 describes Regional household formation based on the in-migration stream generated. In the case of Scenario 2, Regional household formation attributable to the Plan is limited. The text associated with Scenario 1 (Section 6.5) describes the assumptions and methodologies employed in generating the information presented in column 3. Because so little employment is created, given Scenario 2 assumptions, most incremental employment will accrue to current Study Region residents. This is because there are high levels of unemployment in the Study Region indicating a latent labour force large enough to absorb most incremental employment associated with the Scenario 2 version of the Castle River I.R.P. We have only allocated new employment to "outsiders" in cases where it appeared local people with appropriate skills or local entrepreneurial risk takers would not be available. Hence, in year 5, 22.5 of the 24 net new jobs created are allocated locally; in year 10, 14.5 of 16.5 new jobs; in year 15, 19 of 22 new jobs; in year 20, 21.5 of 24.5 new jobs; and in year 25, 16 of 18 new jobs.

Spatially, employment will be allocated to Pincher Creek and Crowsnest Pass residents and to in-migrants in the same proportions as explained in the text associated with Scenario 1 (Section 6.5).

Table 6.29 describes Regional income impacts of the proposed Castle River I.R.P. given Scenario 2 assumptions. Table 6.30 illustrates that in the peak activity year (year 5), implementation of the Plan will result in \$893,131 per year in additional income to individuals and institutions in the Study Region.

Other peaks in Regional Income Impact in years 10 (\$535,343), 15 (\$718,256), and 20 (\$796,026) are primarily attributable to facility development in those years by Alberta Forest Service.

TABLE 6.29
SCENARIO 2: INCOME MULTIPLIER

	Year 2	Year 5	Year 10	Year 15	Year 20	Year 25
Direct and Linked Wages	8,000	49,500	269,000	347,250	390,750	258,750
Public Sector Induced Wages	0	28,000	31,500	38,500	45,500	31,500
TOTAL WAGES (1)	8,000	526,500	300,500	385,750	436,250	290,250
RETURNS TO CAPITAL (2) ^{15,16}	7,000	49,000	37,000	64,000	64,000	64,000
Family Allowance ¹⁷	(180)	180	720	1,260	1,260	1,080
Canada and Old Age Pension ¹⁸	(720)	1,200	2,640	4,320	4,320	3,360
U.I.C. ¹⁹	(1,755)	2,925	6,435	10,530	10,530	8,190
TOTAL INDIVIDUAL TRANSFERS (3)	(2,655)	4,305	9,795	16,110	16,110	12,630
TRANSFERS TO LOCAL GOVERNMENT (4) ¹⁹	(90)	150	330	540	540	420
TOTAL (1 + 2 + 3 + 4)	12,255	579,955	347,625	466,400	516,900	367,300
LOCAL MULTIPLIER	1.54	1.54	1.54	1.54	1.54	1.54
TOTAL INCOME BENEFIT TO THE REGION	18,873	893,131	535,343	718,256	796,026	565,642

"Explanatory notes keyed to this table are found in Appendix 2."

TABLE 6.30
SCENARIO 2: REGIONAL INCOME GENERATED BY PLAN INITIATIVES²¹
(1985 Dollars)

<u>Year</u>	<u>Regional Income</u>
1	\$ 0
2	18,873
3	436,000
4	249,000
5	893,131
6	354,000
7	409,000
8	372,000
9	372,000
10	535,343
11	422,000
12	422,000
13	454,000
14	487,000
15	718,256
16	571,000
17	571,000
18	571,000
19	571,000
20	796,026
21	565,642
22	565,642
23	565,642
24	565,642
25	565,642
26	565,642
27	565,642
28	565,642
29	565,642
30	565,642
TOTAL	\$14,879,049
NPV 5%	\$ 6,907,507
NPV 10%	\$ 3,797,531

Not surprisingly, income impacts follow a path very similar to employment impacts. This is because in an isolated Region, the majority of socio-economic benefits from an initiative such as the Castle River I.R.P. are in the form of employment benefits rather than profits (returns to capital).

The income impact figures presented are indicative only and may be conservative. Decision-makers should compare these income figures with the costs of the Plan before proceeding with the proposed Plan. In addition, societal costs and benefits should be considered.

We distributed the Regional income impact results to every year, from year 1 to year 30 (because of time and resource constraints, employment and income analysis was performed for years 2, 5, 10, 15, 20 and 25 only for this Scenario) with entries for intervening years being estimated from the employment information presented in Table 6.16. Table 6.30 describes the distribution used. Ideally, one would calculate the Regional income impact of the Castle River I.R.P. for every year to year 30. The methodology used is not as accurate as one based on actual calculation of the Regional income impact for every year, but the results should be accurate within a 15% error band. (The consultants possess the raw data to directly calculate the employment and/or income impact for any year from one to thirty if more accurate information is needed in the future).

Using the Symphony spreadsheet computer program, the Present Value of the income stream for Scenario 2 was calculated to be \$6,907,507 over 30 years at a 5% discount rate and \$3,797,507 at a 10% discount rate⁵ (see Table 6.30).

6.7 Conclusions and Implications

- (a) Scenario 1 and Scenario 2 result in significantly different socio-economic impacts on the Study Region. The employment and income impacts associated with Scenario 2 are very limited; on the other hand, the impacts associated with Scenario 1, although not large enough to restructure the Study Region's economy in any significant way, are of some significance.

For example, peak employment attributable to Scenario 1 (129 jobs in year 15) is over five times greater than peak employment attributable to Scenario 2 (24.5 jobs in year 20). Similarly, the net present value of the income stream generated by Scenario 1 (using a 10% discount rate) is over four times greater than the income stream (using the same discount rate) generated by Scenario 2. Other measures of impact show similar or greater differences in the impacts generated by the two Scenarios. For example, the total undiscounted income stream generated by Scenario 1 is 5.42 times larger than the income stream generated under similar assumptions for Scenario 2.

- (b) Decisions concerning implementation of the Castle River I.R.P. must be made in the context of socio-economic development problems in South-Western Alberta. As has been noted, unemployment levels are high in the Crowsnest Pass area of Alberta largely because no coal mines are now operating on the Alberta side of the B.C./Alberta border. Recreation and tourism based development is one of the few alternatives in terms of regional development in the area. Implementation of Scenario 1 would benefit the Crowsnest Pass area in two major ways: (i) it would provide employment, as noted in this Chapter, to Crowsnest Pass residents, and (ii) it would attract tourists to the general area of South-Western Alberta; some of these tourists would visit the Crowsnest Pass area in conjunction with recreational activities in the Castle River Sub-Region.

Scenario 2 would contribute much less significantly in terms of impact (i) above, but would contribute almost as effectively in terms of impact (ii) above.

- (c) Fiscal costs of implementing either Scenario 1 or Scenario 2 are virtually nil in terms of local government responsibilities. Approximately 5% of in-migrants attracted to the Study Region by employment associated with the Castle River I.R.P. will live in the Castle River I.R. Sub-Region per se, 40% will live in Crowsnest Pass, and 55% will live in Pincher Creek.

This means that in the peak year in terms of Demographic Impact as measured by number of incremental households (Scenario 1, year 15) only 45.5 new households would be created in the Study Region attributable to the Castle River I.R.P. If these 45.5 households are distributed to the three geographic areas as noted above, the impact would be approximately two new households in the Castle River I.R. Sub-Region proper, 18 new households in the Crowsnest Pass area, and 25 new households in the Pincher Creek area. (We are assuming no significant development at Beaver Mines).

The above household information rates would not be significant enough to generate a need for new infrastructure, public facilities, or public services in the Study Region.

- (d) Very little Private Sector construction work would be generated except the Direct activity associated with Recreational Facilities development in the case of Scenario 1 (and to a lesser extent with Scenario 2). One or two commercial buildings might be required in Pincher Creek to service increased tourism and to supply construction inputs in the case of Scenario 1. No new buildings would be required in Crowsnest Pass because of the large number of vacant commercial buildings already existing in the Municipality. Implementation of Scenario 1 could induce a modest amount of housing construction in



Pincher Creek (maximum 10-15 houses) but would not induce any housing construction in Crowsnest Pass because of the large number of vacant residential units in that municipality.

- (e) If we compare the probable impact of implementing the Castle River I.R.P. (Scenario 1) with other Integrated Sub-Regional Resource Plans we have analysed using the same methodology, it is obvious that the Castle River Plan has the smallest income impact. As noted, the Castle River I.R.P. generates, using a 10% discount rate, a NPV of \$17,056,161 (Scenario 1); comparable figures for the Jean d'Or, Big Bend, and Lakeland I.R. plans are \$44,358,514 (1 Year Scenario), \$46,647,481 (Scenario C), and \$37,226,700 (Scenario 2), respectively. In terms of comparability, Lakeland is the most obviously similar Integrated Resource Plan to Castle River. The Lakeland I.R.P. is also heavily based on recreation. The impact of the Lakeland Plan, in employment, income, and demographic terms, would be greater than the Castle River Plan because of the higher level of proposed recreational facility development in the case of Lakeland and because of the closer proximity of the Lakeland Sub-Region to a metropolitan area (Edmonton).
- (f) In deciding whether to proceed with the implementation of the Castle River I.R.P., the costs of development must be weighed against the socio-economic benefits outlined in this Chapter. This analysis is undertaken in Chapter 7. Since some benefits and costs are not properly valued in societal terms when market prices are used, it is recommended that a cost-benefit study be undertaken before implementation occurs. This could be done expeditiously using the data in this report.
- (g) In the Castle River case, it would appear that opportunity costs associated with the Plan are reasonably low because of the nature of the terrain and the relative isolation of the area from a metropolitan area. As noted, the main opportunity costs, in terms of existing activity, will be a small amount of trapping and logging activity.

- (h) As was the case in Lakeland, it can be forecast that any recreational development in the Castle River Sub-Region will have an almost immediate impact on the Study Region in terms of socio-economic benefits. This is unlike the situations in some other Integrated Resource Planning situations where there can be a long lag time between investment in agricultural or forestry infrastructure and income payoff.
- (i) In the case of Scenario 1, the "bursts of activity" in years 10 to 13 inclusive, and years 15 to 17 inclusive could create some minor problems in that both periods are followed by "fall offs" in employment and income impacts. The first "burst" is followed by only one year of slack activity (year 14), so it is not of major concern; however, the fall off of activity commencing in year 18 could be more serious. Local entrepreneurs, through local Chambers of Commerce and local Economic Development Committees should be advised of the moderately "roller coaster" nature of impacts associated with Scenario 1.
- (j) As has been noted in the text, the incidence of most socio-economic impacts will be on Pincher Creek and the Municipality of Crowsnest Pass rather than to the Castle River I.R.P. Region per se.
- (k) There is little risk associated with implementing the Castle River I.R.P. in terms of irreversibilities. That is, because it is a plan that is protective of the environment, it does not eliminate many options for the Sub-Region in the future. Given this situation, the relatively small costs associated with implementing it, and the socio-economic benefits outlined in this chapter, the Castle River I.R.P. should be given serious consideration in terms of implementation.
- (l) In summary, the Castle River I.R.P. is a relatively low impact plan in socio-economic terms. This relatively low impact is balanced by relatively low public sector costs associated with implementing it (see

Chapter 7). Its' greatest asset is the fact that there are few irreversible initiatives associated with it. Other assets include the fact that it is protective of the local biophysical environment and will disrupt the local socio-cultural system very little. Given this situation, the Castle River I.R.P. is a worthy candidate for serious consideration vis a vis implementation.

CHAPTER SIX - FOOTNOTES

- 1 This Chapter describes employment and income benefits to the Study Region, based on market prices. Output in this Chapter does not yield information to enable judgements to be made as to whether the capital employed in implementing the Castle River I.R. Plan could have been better used elsewhere, or whether the costs and benefits to society as a whole justify the public policy decision to proceed with implementation of the Castle River I.R. Plan. To answer the above questions, one would have to undertake a cost-benefit study.
- 2 For marketing and financial analysis of the proposed West Castle ski development, see West Castle Ski Facility Utilization Study, Marshall Macklin Monaghan Western Limited, June, 1981.
- 3 The Urban and Regional Research Laboratory in the Urban and Regional Planning Program at the University of Calgary is currently preparing a tourism development strategy for the Crowsnest Pass Area of Alberta based on an Industrial Archeological approach. Copies of the report will be available from the client, Alberta Culture, in early 1986.
- 4 The mix of goods/services purchased by rural households in southwestern Alberta was determined using Statistics Canada data.
- 5 There is considerable debate concerning the proper methodology to formulate the discount rate for public sector projects. For an excellent summary of methodologies available see; Quirin, G.D. The Capital Expenditure Decision; Homewood, Illinois, Pub. Richard D. Irwin Inc. 1967, refer to pages 152-159.

CHAPTER SIX - REFERENCES

- 1 Alberta Bureau of Statistics, Alberta Statistical Review 1983 and 1984.
- 2 Alberta Tourism and Small Business, Alberta Locations: Municipality of Crowsnest Pass, 1984.
- 3 Alberta Ministry of Tourism and Small Business, Alberta Locations: Town of Pincher Creek, 1984.
- 4 Alberta Report, Atlas of Alberta, 1984, pgs. 25, 26, 27, 31, 152, 114, 115, 116.
- 5 Pincher Creek and District Economic Development Board, Pincher Creek and Area Community Services Directory, 1985.
- 6 Statistics Canada, 1981 Census Data on I.D. 6, M.D. 9, and Crowsnest Pass.
- 7 University of Calgary, Urban and Regional Research Laboratory, A Tourism Strategy for Crowsnest Pass Based on its Historical Resources, 1985.



7.0 FISCAL IMPLICATIONS

The previous sections of this report have examined the implications of the Castle River Integrated Resource Plan upon the primary resource sectors along with the related regional income and employment impacts which may be expected.

Implementation of the Plan will generate expenditures and revenues for the Provincial government. In this section some major revenues and expenditures are identified in order to provide a general overview of the probable fiscal impact which might be experienced by government departments and municipalities effected by the Plan. Detailed measurement of Plan impacts can only be undertaken upon completion of an implementation plan and subsequent policy commitments.

The fiscal categories and probable revenues and expenditures are indicated on Table 7.1. The categories are divided into provincial direct and indirect/induced; and municipal direct and indirect/induced. Direct expenditures or revenues are those related directly to the Plan initiatives, while indirect and induced expenditures and revenues are related to population changes.

7.1 Direct Expenditures

As indicated on Table 7.1 the direct Provincial expenditures examined are those attributed to:

- (a) administration and research requirements
- (b) capital development and operational costs
- (c) range improvements



TABLE 7.1
GOVERNMENT EXPENDITURE AND REVENUE CATEGORIES

GOVERNMENT LEVEL	SOURCE	EXPENDITURES	REVENUES
PROVINCE	Plan Related	- Administration and Research - Capital Dev't of Recreation and Tourism sites. - Operation of Dev'ts. - Range Improvements	- Recreation User Charges - Grazing Lease/Permits - Land Revenues - Royalties
	Population Related	- Education - Health - Security - Transfers to Municipalities	- Income Tax
I.D. 6 M.D. 9	Population Related	- Access Roads - Transfers - Education - Administration - Infrastructure	- Property Tax - Transfers from Province - User Charges
TOWN OF PINCHER CREEK MUNICIPALITY OF CROWSNEST PASS		- Administration - Urban Infrastructure - Education - Security	- Property Tax - Transfers from Province

7.1.1 Administration and Research

Expenditures in this category relate primarily to incremental professional planning and design staff requirements needed by the Provincial government departments to implement the Plan.

The major Plan initiative is the provision of recreation facilities by the Alberta Forest Service, Alberta Fish and Wildlife and the Department of Recreation and Parks, and these are the only agencies which were identified as requiring additional staff. All other agencies required only the reallocation of existing staff.

Table 7.2 shows the number of man years of "public service" employment and the estimated wage expenditures for Scenario 1 and 2. For the purposes of this analysis, it has been assumed that these man years are not carried during the years between projects, i.e. years 6-9, 14, 18 and 19. For Scenario 1, the maximum number of additional man years is 11 occurring in years 5 and 10 with wages of \$313,500. Total man years for Scenario 1 is 77.5 with a total cost of 2 million dollars.

Scenario 2 generates approximately one third the total number of man years of the first scenario. This reflects the modest recreation facility development envisioned by the Forest Service. The projects proposed in this scenario are of a short term duration, i.e. 1 month - 6 months, thus they are shown on the table in the year the project is scheduled to begin. A total of 26.5 man years of administration employment are generated by Scenario 2 at a cost of 0.6 million dollars.

TABLE 7.2
ADMINISTRATION EXPENDITURES

SCENARIO 1			SCENARIO 2		
<u>YEAR</u>	<u>MAN YEARS</u>	<u>WAGES & EXPENDITURES</u>	<u>MAN YEARS</u>	<u>WAGES & EXPENDITURES</u>	
1					
2					
3					
4	0.5	\$ 14,250	0.5	\$ 12,000	
5	11.0	313,500	11.5	276,000	
6					
7					
8					
9					
10	11.0	313,500	4.5	108,000	
11	10.0	285,000			
12	10.0	285,000			
13	10.0	285,000			
14					
15	7.0	199,500	4.5	108,000	
16	7.0	199,500			
17	7.0	199,500			
18					
19					
20	4.0	114,000	5.5	132,000	
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
TOTAL	77.5	\$2,208,750	26.5	\$636,000	
NPV 5%		\$1,243,657		\$394,128	
NPV 10%		\$ 746,106		\$266,684	

1 Recreation and Parks employment estimated by assuming 55% of total project development costs were wages and salaries.

7.1.2 Capital Development and Operating Costs of Recreation and Tourism Related Developments

This section will highlight the estimated capital and operating costs of the various recreation projects related to Plan implementation which were discussed in Chapter 2. Again, it should be noted that the proposed projects may not be developed as outlined in this report or they may not be developed at all.

For Scenario 1, the Alberta Forest Service, Alberta Fish and Wildlife and the Department of Recreation and Parks have indicated a number of projects that could be undertaken to nearly double the existing camping/day use facilities and to provide trails and other associated facilities. The total cost of these projects is estimated to be 14.5 million dollars (Table 7.3).

Unlike capital costs which are sporadic in this scenario, incremental operating expenses, once generated continue to be expended annually throughout the study time period. These operating expenses include both wages and salaries and material costs. During years 3-9 of the Plan implementation, operating expenses remain constant at approximately \$39,000. For years 10-30, the operating costs increase from approximately 1.1 million dollars to 1.7 million dollars. The total operating cost is estimated to be 33 million dollars (Table 7.3).

For Scenario 2, only the Alberta Forest Service and Alberta Fish and Wildlife projects were analysed.

In this scenario, an additional 100 campsite sites or approximately 15% more sites are provided. In addition, trails and associated facility developments are undertaken. The total cost to provide these facilities is estimated to be approximately 0.9 million dollars (Table 7.4).

In Scenario 2, the operating costs are significantly lower, ranging from approximately \$21,000 in year 5 to \$116,000 for year 20 and thereafter. The total operating cost is estimated to be approximately 2 million dollars over the 30 year time period (Table 7.4).

For both scenarios total operating costs greatly exceed total capital costs.

7.1.3 Range Improvements

This expenditure category refers to the costs to the Provincial government to improve the range allotments in the Castle River area to allow for an increase of 1,120 Animal Unit MOonths (AUMs) (Chapter 3). For the purposes of the analysis, it has been assumed that the total range improvement costs of \$784,000 are incurred over a five year period. Further, it is assumed that 50% of the total cost occurs in the first year, which reflects clearing costs. These expenditures start in year 3 of plan implementation. As indicated on Table 7.3 and 7.4, the range improvement expenditures are the same for both scenarios with \$392,000 being expended in year 3 and \$98,000 for years 4-7.

7.1.4 Summary

Unlike the previous Financial, Income and Employment Analysis for Jean D'Or, Big Bend and Lakeland, there are no transportation or utility servicing costs associated with the implementation of the Castle River I.R.P.

As indicated on Tables 7.3 for Scenario 1 and 7.4 for Scenario 2, the direct Provincial government expenditures are primarily associated with range improvements and recreation facility developments. As presented, these projects will not involve any municipal funds. With respect to direct expenditures, Scenario 1 incurs 10 times the costs of Scenario 2.



TABLE 7.3 EXPENDITURE SUMMARY SCENARIO 1

YEAR		Range Improvement	Recreation Operating	Recreation Capital	Administration	TOTAL
1985	1					\$0
	2					\$0
	3	\$392,000				\$392,000
	4	\$98,000			\$14,250	\$112,250
1990	5	\$98,000	\$39,469	\$395,600	\$313,500	\$846,569
	6	\$98,000	\$39,469			\$137,469
	7	\$98,000	\$39,469		\$17,500	\$154,969
	8		\$39,469		\$17,500	\$56,969
	9		\$39,469		\$17,500	\$56,969
1995	10		\$1,103,206	\$2,206,863	\$348,500	\$3,658,569
	11		\$1,103,206	\$2,235,363	\$320,000	\$3,658,569
	12		\$1,103,206	\$2,235,363	\$320,000	\$3,658,569
	13		\$1,103,206	\$2,235,363	\$320,000	\$3,658,569
	14		\$1,103,206		\$35,000	\$1,138,206
	15		\$1,696,515	\$1,666,250	\$234,500	\$3,597,265
2000	16		\$1,696,515	\$1,666,250	\$234,500	\$3,597,265
	17		\$1,696,515	\$1,666,250	\$234,500	\$3,597,265
	18		\$1,696,515		\$35,000	\$1,731,515
	19		\$1,696,515		\$35,000	\$1,731,515
	20		\$1,725,056	\$155,250	\$149,000	\$2,029,306
2005	21		\$1,725,056		\$35,000	\$1,760,056
	22		\$1,725,056		\$35,000	\$1,760,056
	23		\$1,725,056		\$35,000	\$1,760,056
	24		\$1,725,056		\$35,000	\$1,760,056
	25		\$1,725,056		\$35,000	\$1,760,056
2010	26		\$1,725,056		\$35,000	\$1,760,056
	27		\$1,725,056		\$35,000	\$1,760,056
	28		\$1,725,056		\$35,000	\$1,760,056
	29		\$1,725,056		\$35,000	\$1,760,056
	30		\$1,725,056		\$35,000	\$1,760,056
2015						
TOTAL		\$784,000	\$33,171,566	\$14,462,552	\$2,996,250	\$51,414,368
NPV 5%		\$438,811	\$12,599,651	\$7,752,265	\$1,568,482	\$22,559,208
NPV 10%		\$327,909	\$5,401,292	\$4,353,967	\$899,040	\$11,182,215

TABLE 7.4 EXPENDITURE SUMMARY SCENARIO 2

YEAR		Range Improvement	Recreation Operating	Recreation Capital	Administration	TOTAL
1985	1					\$0
	2					\$0
	3	\$392,000				\$392,000
	4	\$98,000			\$12,000	\$110,000
1990	5	\$98,000	\$21,519	\$353,100	\$264,000	\$736,619
	6	\$98,000	\$21,519			\$119,519
	7	\$98,000	\$21,519		\$17,500	\$137,019
	8		\$21,519		\$17,500	\$39,019
	9		\$21,519		\$17,500	\$39,019
1995	10		\$60,219	\$228,200	\$125,500	\$413,919
	11		\$60,219		\$17,500	\$77,719
	12		\$60,219		\$17,500	\$77,719
	13		\$60,219		\$17,500	\$77,719
	14		\$60,219		\$17,500	\$77,719
2000	15		\$92,019	\$192,000	\$125,500	\$409,519
	16		\$92,019		\$17,500	\$109,519
	17		\$92,019		\$17,500	\$109,519
	18		\$92,019		\$17,500	\$109,519
	19		\$92,019		\$17,500	\$109,519
2005	20		\$115,869	\$93,000	\$149,500	\$358,369
	21		\$115,869		\$17,500	\$133,369
	22		\$115,869		\$17,500	\$133,369
	23		\$115,869		\$17,500	\$133,369
	24		\$115,869		\$17,500	\$133,369
2010	25		\$115,869		\$17,500	\$133,369
	26		\$115,869		\$17,500	\$133,369
	27		\$115,869		\$17,500	\$133,369
	28		\$115,869		\$17,500	\$133,369
	29		\$115,869		\$17,500	\$133,369
2015	30		\$115,869		\$17,500	\$133,369
TOTAL		\$784,000	\$2,143,344	\$866,300	\$1,044,000	\$4,837,644
NPV 5%		\$638,811	\$826,881	\$544,164	\$564,919	\$2,574,694
NPV 10%		\$527,999	\$567,437	\$367,015	\$347,987	\$1,810,348

7.2 Indirect/Induced Expenditures

These costs are related to the population generated primarily through employment in recreation facility development and operations, and servicing of recreators. For this analysis, the expenditures are those generated in the area of education, health, security, infrastructure and transfers.

7.2.1 Education

Educational services for the area affected by the Castle River Plan are provided by two school divisions. The Crowsnest Pass School Division No. 63 provides educational services to the Municipality of Crowsnest Pass; the Pincher Creek School Division No. 29 to the Municipal District of Pincher Creek No. 9 (M.D. 9), the Town of Pincher Creek, and Improvement District No. 6 (I.D. 6).

Currently all eight schools located within the area are operating below capacity with an overall student teacher ratio of 8.7 to 1. Early Childhood Education programs are not under the jurisdiction of the School Divisions, and take place in unoccupied classrooms rented from the School Divisions. Although one school is near capacity due to the ECE program there, reduced enrollment at the remaining seven schools brings the overall enrollment in 1985 to 68% of the area's capacity (see Table 7.5).

With an additional capacity to accommodate some 1207 additional students, the addition of bus drivers and overall school expansions is not planned nor will it be considered. At the same time, there are no plans to close any schools.

TABLE 7.5
SCHOOL FACILITIES

<u>SCHOOL</u>	<u>ESTIMATED CAPACITY</u>	<u>GRADES</u>	<u>ENROLLMENT</u>	<u>STAFF TEACHERS</u>	<u>ECE*</u>
M.D. McEachern (Crowsnest Pass School Division)	375	1-6	233 (including 32 ECE*) (62%)	11	1
Isabelle Sellon (Crowsnest Pass School Division)	650	K-8	503 (including 34 ECE) (77%)	29	1
Horace Allen (Crowsnest Pass School Division)	370	1-6	301 (including 36 ECE) (81%)	17	1
Crowsnest Consolidated High School (Crowsnest Pass School Division)	665	9-12	404 (61%)	23	-
Matthew Halton Community School (Pincher Creek School Division)	619	7-12	390 (63%)	29	-
Livingstone School (Pincher Creek School Division)	417	1-12	287 (including 24 ECE (69%))	19	1
Central (Pincher Creek) (Pincher Creek School Division)	118	1-3	110 (including 39 ECE**) (93%)	3	2
Canyon School (Pincher Creek) (Pincher Creek School Division)	549	1-6	346 (63%)	21	-
	3757		2550 (including 165 ECE)	152	3

* Early Childhood Education (ECE)

** 39 ECE students are at Central School each full day (78 ECE students are enrolled for a half day).

Chapter 6.0 provides the demographic impacts of plan implementation. The number of school aged children estimated for both scenarios is as follows:

ESTIMATED NUMBER OF SCHOOL AGED CHILDREN¹

YEAR	SCENARIO 1		SCENARIO 2	
	Pincher Creek School Division	Crowsnest Pass School Division	Pincher Creek School Division	Crowsnest Pass School Division
2	0	0	0	0
5	0	0	0	0
10	10	13	0	1
15	15	20	1	1
20	14	17	1	1
25	14	18	1	1

It is not anticipated that additional child professionals (teachers, teacher aids, education administrators, councillors, etc. will be required for the students generated by either scenario.

The province and the municipal rate payers bear the operating costs in the Crowsnest Pass and Pincher Creek School Divisions. The "average" operating cost/pupil is comprised of the instructional, school maintenance, transportation and administrative components. Grant funding through various sources offsets the overall operational costs: The Crowsnest Pass School Division estimates that the operating cost is \$3,118 per pupil, which is offset by total operating grants of approximately \$2,649 per student. The operating cost not covered by the grants is paid through municipal rate payers and school revenues. This figure is approximately \$469 per pupil. Likewise, the Pincher Creek School Division has estimated an "average" operating cost per pupil of \$4,220, which is offset by total operating grants of approximately \$2,917. The operating cost not covered by grants is approximately \$1,303.

The estimated incremental operating costs generated by the increase in the number of school aged children for each scenario is:

ESTIMATED OPERATING COSTS²

YEAR	SCENARIO 1		SCENARIO 2	
	Pincher Creek School Division	Crowsnest Pass School Division	Pincher Creek School Division	Crowsnest Pass School Division
2	0	0	0	0
5	0	0	0	0
10	\$42,200	\$40,534	0	\$3,118
15	\$63,300	\$62,360	\$4,220	\$3,118
20	\$59,080	\$53,006	\$4,220	\$3,118
25	\$59,080	\$56,124	\$4,220	\$3,118

Given the present operating grants per student, the projected grants per scenario would be:

ESTIMATED OPERATING GRANTS

YEAR	SCENARIO 1		SCENARIO 2	
	Pincher Creek School Division	Crowsnest Pass School Division	Pincher Creek School Division	Crowsnest Pass School Division
2	0	0	0	0
5	0	0	0	0
10	\$29,170	\$34,437	0	\$2,649
15	\$43,755	\$52,980	\$2,917	\$2,649
20	\$40,838	\$45,033	\$2,917	\$2,649
25	\$40,838	\$47,682	\$2,917	\$2,649

A proportion of the operating costs not covered by grants will be borne by the new in-migrants to the area. Once a Castle River Implementation Plan is complete, the school divisions should be informed as to the estimated numbers and location of school age children in order that more detailed financial and placement analysis can be undertaken.

7.2.2 Health

The major regional service centres for the area affected by the Castle River Plan are Crowsnest Pass and Pincher Creek. The medical and extended care facilities are identified on Table 7.6.

It should be noted that presently the utilization of active beds is 65% to 70%, more than adequately meeting the need.

TABLE 7.6
HEALTH FACILITIES

HOSPITAL	BEDS				DOCTORS
	Active	Auxiliary	Nursing	Current Annual Level of Utilization	
EXISTING:					
Crowsnest Pass General and Auxiliary Hospital and Nursing Home District #40	41	0	66	65% (Active Beds) 98% (Nursing Home Beds)	4
Pincher Creek General Hospital	42	20	0	67% (Active Beds) 100% (Aux. Beds)	5
EXISTING TOTALS	83	20	66	-	9
PROPOSED:					
New Hospital and Nursing Home to open April, 1987*	50	20	40	-	4
Pincher Creek General Hospital	42	20	25	-	5
TOTAL FUTURE PLANNED	92	40	65	-	9

* To take the place of the present Crowsnest Pass Hospital.

The population generated by either scenario can be adequately handled by the existing health facilities.

7.2.3 Security

The Pincher Creek detachment of the R.C.M.P. serves the Castle River Planning Area. The detachment has fifteen regular staff and three to six Indian specialists. There are no immediate plans for the expansion or reduction of staff. An employee of the Alberta Forests provides a valuable service, ensuring security in parks by patrolling parks and searching for lost hikers, hunters and fishermen. It was suggested that the R.C.M.P. detachment would have to become involved in the security of the surrounding parks if this position was eliminated.

Another area which could be affected by the Castle River Plan is the Municipality of Crowsnest Pass. There are twelve R.C.M.P. constables located in Crowsnest Pass who serve the municipality. This detachment also has no immediate plans to increase or decrease staff.

Through discussions with both detachments, it was learned that although the policeman per population standards are 1:750, manpower is increased, taking into consideration not only additional population but also work load and territory to be covered. Currently, peak use of existing camping areas and related hunting, boating and fishing activities of Castle River visitors has not placed undue stress on the detachments. As both detachments are presently very busy, population generated through increased recreation and tourism development could require additional security.

For Scenario 1, 0.5 additional constable is required for years 7-9 and 1 additional constable is required thereafter. It is assumed that 1 full-time constable earns \$35,000 per year. These costs have been included under the administration expenditures on Table 7.3.

For Scenario 2, 0.5 additional constable at a cost of \$17,500 per year is required in year 7 and thereafter. This cost has been included under administration expenditures on Table 7.4

7.2.4 Transfers

Provincial assistance grants available for municipalities include the Municipal Assistance Grant, Alberta Environment Grants, Alberta Senior Citizens Transportation Grant, Disaster Services Grant, Community Recreation/Cultural Grant and Recreation Areas Program.

For the purposes of this study, only the Municipal Assistance Grant and Recreation Grants were considered relevant. In 1985, the Municipal Assistance Grants to the Municipality of Crowsnest Pass, the M.D. of Pincher Creek, I.D. 6 and the Town of Pincher Creek were \$504,689, \$279,708, \$30,000 and \$268,885 respectively. Grant funding is based on a formula involving weighted population and weighted road kilometres. A proxy has been derived by dividing the population of the municipality by the grant received which results in an to estimated approximate per capita grant for the Municipality of Crowsnest Pass, the M.D. of Pincher Creek, I.D. 6 and the Town of Pincher Creek of \$67, \$94, \$119 and \$72 respectively.

Given the populations generated by plan implementation, total municipal grants would be as follows:

ESTIMATED MUNICIPAL GRANTS

YEAR	SCENARIO 1			SCENARIO 2		
	Municipality of Crowsnest Pass	Town of Pincher Creek	M.D. 9	Municipality of Crowsnest Pass	Town of Pincher Creek	M.D. 9
2	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
5	\$ 67	\$ 72	\$ 47	\$ 67	\$ 72	\$ 47
10	\$2,546	\$2,160	\$1,551	\$168	\$144	\$ 94
15	\$4,188	\$3,492	\$2,632	\$268	\$216	\$188
20	\$3,518	\$2,952	\$2,162	\$268	\$216	\$188
25	\$3,551	\$2,952	\$2,209	\$201	\$180	\$141

The Community Recreation/Cultural Grant Program began in 1985. This program provides municipalities and volunteer community groups with both capital and operating funds for a variety of recreation related projects. Under the program, municipalities can received up to \$20 per capita per year for the next five years. This would generate an estimated maximum for all municipalities of \$2,780 in year 15 of Scenario 1 and \$180 in years 15-20 of Scenario 2.

The Recreation Areas Program provides municipalities in rural Alberta with capital funds of up to \$100,000 per site to develop outdoor recreation facilities. Operating funds of up to \$20,000 per year for 25 years are also available. Ten sites within the province are being funded each year. For this analysis, Recreation Area Programs were not examined.

7.2.5 Infrastructure

It is felt that population increases generated by the Plan by either scenario can be adequately accommodated within the rather sparsely populated M.D. of Pincher Creek, I.D. 6, the Town of Pincher Creek and the Municipality of Crowsnest Pass. Additional population can be accommodated within the existing infrastructure of all but the smallest villages and hamlets.

7.2.6 Summary

The implementation of the Castle River I.R.P. by either scenario does not appear to generate substantial Indirect/Induced expenditures for the municipalities and the province. Most of the population services, i.e. schools, hospitals, infrastructure are presently under utilized. The only requirement is for additional policing primarily due to the increased number of recreation visitors, not due to the increase in Study Area residents.

7.3 Revenues

The major sources for government revenues generated by the Plan or the expected population growth are recreation user charges, grazing lease/permits, land revenues, royalties, property and incomes taxes.

The municipalities receive only the property tax while the user charges, permit fees, land revenues, royalties and income taxes accrue to the province.

7.3.1 Recreation User Charges

Most of the existing recreation facilities in the Study Area are provided by the Alberta Forest Service (AFS). User fees are not charged for AFS campsite at present and this was assumed to continue through the study time period. However, Recreation and Parks does charge a user fee at Beauvais Lake.

For Scenario 2, a fixed "average" campsite fee of \$3 was assumed to apply throughout.⁵ These fees were applied five years after project commencement and amount to \$90,500 for years 15-19 and \$138,750 thereafter for a total of 1.7 million dollars.

7.3.2 Grazing Lease/Permit

For Scenario 2, the user charges remain \$15,500 annually and total \$465,000 over the study period.

As discussed in Chapter 3, the range improvements proposed by implementation of the Plan will increase the number of Animal Unit Months (AUMs) on the existing range allotments by 1,120. It has been assumed that the current \$2.00 per AUM/annum would continue to apply throughout the study period. Further, it was assumed that one quarter of the additional AUMs would occur starting in year 5.⁶ These

charges provide a total revenue of \$55,000 over years 5-30 for both scenarios.

7.3.3 Land Revenues

As outlined, the implementation of the Castle River I.R.P. does not involve the sale of crown land, thus, land revenues will not be generated. However, should crown lands in the vicinity of the West Castle ski facility be released, revenues would accrue to the Province.

7.3.4 Royalties

As outlined in Chapter 5, mineral resource activities are occurring in the Study Area. Potential royalty revenues were not examined due to the indefinite reserve information.

7.3.5 Property Taxes

As noted in Section 7.3.3, the Plan does not involve the sale of crown lands, therefore, property tax revenues will not be generated. Further, the transfer of 2914 ha from White Area to Green Area status should not affect the M.D. of Pincher Creek tax base.

7.3.6 Income Taxes

The estimated Alberta income taxes generated from the Plan implementation are derived from incomes from Chapter 6. The estimated income taxes for the scenarios are as follows:

ANNUAL INCOME TAXES

YEAR	SCENARIO 1	SCENARIO 2
2 - 4	\$ 741	\$ 741
5 - 9	\$ 44,538	\$34,823
10 - 14	\$184,465	\$20,859
15 - 19	\$200,922	\$27,980
20 - 24	\$126,877	\$31,013
25 - 30	\$115,320	\$22,035

7.3.7 Summary

Table 7.7 indicates the revenue summaries for Scenarios 1 and 2. Provincial revenues for recreation user charges and grazing lease/permits totals 2.2 million dollars in Scenario 1 and \$520,000 in Scenario 2, for the 30 year period.

7.4 Conclusion

The implementation of the Castle River I.R.P. will generate expenditures and revenues for the provincial government with little or no impact on the municipalities. Major expenditures by the province and the municipalities for infrastructure to support the Plan initiatives are not required.

The estimated provincial revenue and expenditure streams for each scenario are shown on Table 7.8. For both scenarios, the largest expenditures arise from the costs of operating the proposed recreation developments. The estimated expenditures exceed the potential revenues in all cases, with the total revenues not equaling even 4% of the estimated total expenditures. In terms of revenue and expenditures, Scenario 1 has the highest expenditures and generates the highest revenues.

TABLE 7.8
SUMMARY OF REVENUE AND EXPENDITURE

	SCENARIO 1		SCENARIO 2	
	<u>Revenue</u>	<u>Expenditure</u>	<u>Revenue</u>	<u>Expenditure</u>
Total	\$2,250,630	\$51,414,338	\$519,880	\$4,837,644
NPV 5%	\$ 831,354	\$22,559,208	\$262,214	\$2,574,694
NPV 10%	\$ 363,928	\$11,182,215	\$158,170	\$1,610,348

TABLE 7.7 REVENUE SUMMARY

SCENARIO 1				SCENARIO 2			
YEAR		RECREATION USER CHARGES	GRAZING CHARGES	TOTAL	RECREATION USER CHARGES	GRAZING CHARGES	TOTAL
1985	1	\$15,500		\$15,500	\$15,500		\$15,500
	2	\$15,500		\$15,500	\$15,500		\$15,500
	3	\$15,500		\$15,500	\$15,500		\$15,500
	4	\$15,500		\$15,500	\$15,500		\$15,500
1990	5	\$15,500	\$500	\$16,000	\$15,500	\$500	\$16,000
	6	\$15,500	\$1,120	\$16,620	\$15,500	\$1,120	\$16,620
	7	\$15,500	\$1,000	\$17,100	\$15,500	\$1,000	\$17,100
	8	\$15,500	\$2,240	\$17,740	\$15,500	\$2,240	\$17,740
1995	9	\$15,500	\$2,240	\$17,740	\$15,500	\$2,240	\$17,740
	10	\$15,500	\$2,240	\$17,740	\$15,500	\$2,240	\$17,740
	11	\$15,500	\$2,240	\$17,740	\$15,500	\$2,240	\$17,740
	12	\$15,500	\$2,240	\$17,740	\$15,500	\$2,240	\$17,740
2000	13	\$15,500	\$2,240	\$17,740	\$15,500	\$2,240	\$17,740
	14	\$15,500	\$2,240	\$17,740	\$15,500	\$2,240	\$17,740
	15	\$90,500	\$2,240	\$92,740	\$15,500	\$2,240	\$17,740
	16	\$90,500	\$2,240	\$92,740	\$15,500	\$2,240	\$17,740
2005	17	\$90,500	\$2,240	\$92,740	\$15,500	\$2,240	\$17,740
	18	\$90,500	\$2,240	\$92,740	\$15,500	\$2,240	\$17,740
	19	\$90,500	\$2,240	\$92,740	\$15,500	\$2,240	\$17,740
	20	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
2010	21	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
	22	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
	23	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
	24	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
2015	25	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
	26	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
	27	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
	28	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
TOTAL	29	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
	30	\$138,750	\$2,240	\$140,990	\$15,500	\$2,240	\$17,740
TOTAL		\$2,195,750	\$54,000	\$2,250,830	\$465,000	\$54,000	\$519,000
NPV 5%		\$897,413	\$23,941	\$931,354	\$238,273	\$23,941	\$262,214
NPV 10%		\$851,875	\$12,053	\$863,928	\$146,117	\$12,053	\$158,170

CHAPTER 7 - FOOTNOTES

1. Sixty-five percent of all children derived on Tables 6.8 - 6.13 and Tables 6.23 - 6.28 are of public school age (5 - 19). Further, it is assumed that 55% of the school age children are located in the Crowsnest Pass School Division and 45% are located in the Pincher Creek School Division.
2. Calculated by multiplying the number of school age children by estimated school division average operating cost.
3. Calculated by multiplying the number of school age children by estimated school division average operating grant.
4. For purposes of the analysis, it is assumed that the total population generated by Plan implementation (Tables 6.8 - 6.13 and 6.23 - 6.28) is dispersed as follows: 45% to the Municipality of Crowsnest Pass, 35% to the Town of Pincher Creek, and 20% to the Castle River Study Area (M.D. 9).
5. See Table 2.7, Footnote 10.
6. In year 3, it is assumed the land is cleared and in year 4 other improvements are undertaken. Thus, animals are not on the land until year 5.



8.0 CONCLUSIONS

The purpose of this report was to assess the financial, income, employment, and demographic effects that are likely to occur as a result of implementing the Castle River I.R.P.

The major plan initiative is the development of recreation facilities in the Castle River I.R. Sub-Region. Two alternative recreation development scenarios were examined. Scenario 1 assumed that projects were undertaken by the Alberta Forest Service and by Alberta Department of Recreation and Parks (Appendix 1A). Scenario 2 assumed that only the Alberta Forest Service projects were undertaken after 1990. For the remaining resource sectors, i.e., agriculture, timber harvesting and minerals, the implications of implementing the specific management actions regarding these resources in the Plan were analysed. In addition, the provincial expenditures and revenues which would result from the various Plan initiatives were examined.

The data generated by the analysis is intended to be useful in considering the financial and income implications of pursuing different planning options within the Castle River I.R. Sub-Region. However, it is important to appreciate the limitations of the research (beyond the usual constraints of available time and effort) when interpreting or applying the results. In attempting to forecast future events, numerous assumptions had to be made in portraying a highly complex set of social, economic and environmental variables.

The analysis used the most likely projects which would be undertaken to fulfill the Plan initiatives. However, these projects may not be undertaken as described, i.e., specifications may vary, or they may not be undertaken at all due to changing priorities and budgetary limitations. Regardless, the analysis does indicate the nature and probable magnitude of impacts of the Plan implementation.

In the following sections, some basic conclusions are summarized in regard to the sectoral impact, regional effects and fiscal implications than can be anticipated as a result of plan implementation.

8.1 Sectoral Impact

8.1.1 Wildlife, Fisheries, Recreation and Tourism

The major initiatives of the Castle River I.R.P. apply to these four major interrelated land uses. The report examined the current and projected utilization of wildlife and fisheries resources and current projected recreation and tourism activities in the sub-region. The impacts of the proposed West Castle expansion were not included in the analysis, since development direction remained inconclusive at the time of this report.

The impact of the Plan implementation was undertaken using two recreation development scenarios. Scenario 1 assumed that projects were undertaken by the Alberta Forest Service and Alberta Recreation and Parks for a total capital cost of \$14.5 million, while Scenario 2 assumed that facilities were developed almost entirely by the Alberta Forest Service for a total capital cost of \$0.87 million.

With respect to current and projected utilization, it was assumed that only the "other" category would be affected by the varying recreation development scenarios. Figures 8.1 and 8.2 indicate that fishing is the largest recreation activity in the area. Consumption of fish and wildlife are at capacity, however, fish and wildlife harvest rates are expected to remain constant if maintenance objectives outlined in the Plan are met. Fishing activity is expected to increase over the next 15 years then level off, while hunting activity is expected to increase slightly over the next five years. For both scenarios, estimated recreation expenditures related to fishing and hunting activities increase from 4.4 million dollars in 1985 to 5.5 million dollars by year 2000 and remain constant thereafter. Figure 8.3 shows current and projected visitor expenditure levels by category and scenario.

CURRENT AND PROJECTED VISITOR DAYS

SCENARIO 1

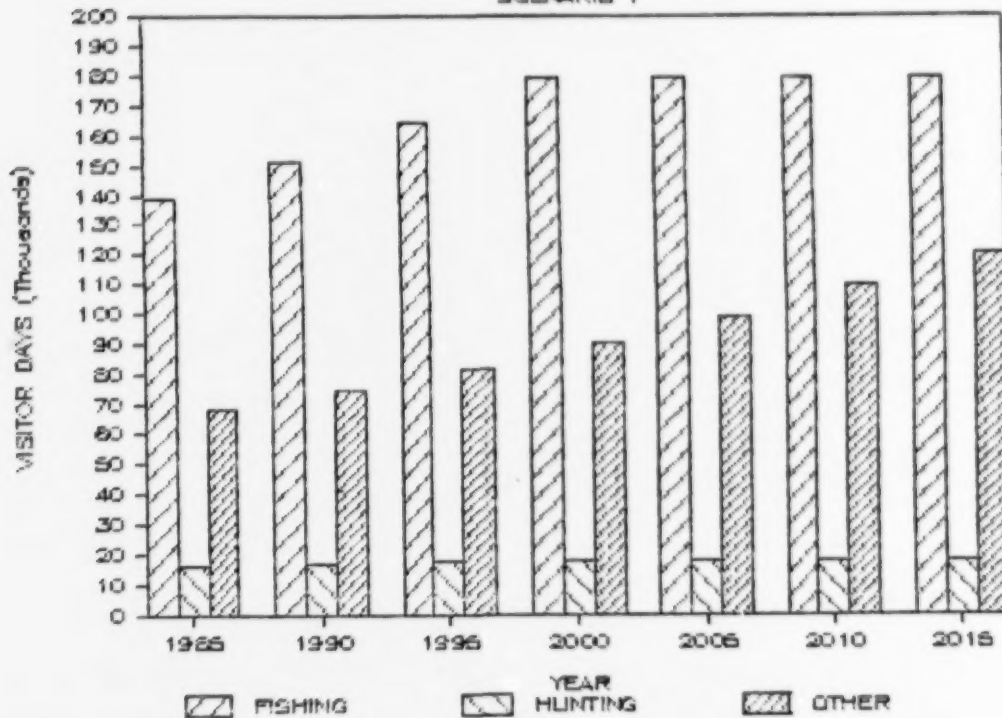


FIG. 8.1

CURRENT AND PROJECTED VISITOR DAYS

SCENARIO 2

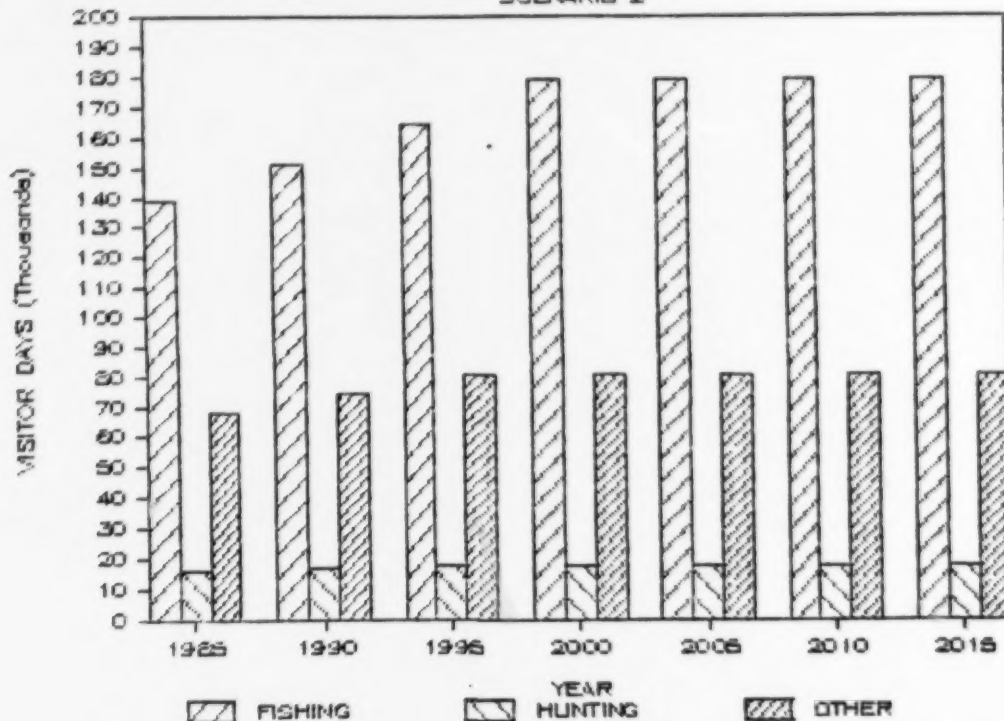
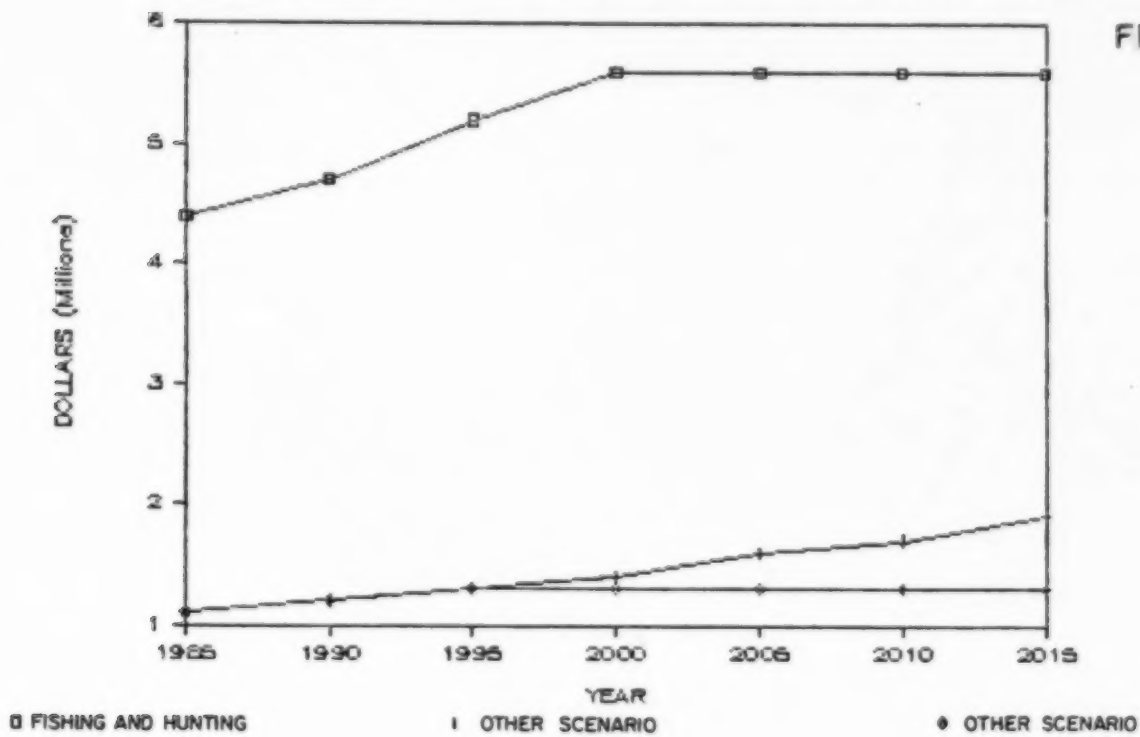


FIG. 8.2

PROJECTED RECREATION EXPENDITURES

FIG. 8.3



In addition to hunting and fishing, there are currently an additional 68,435 recreation days related to "other" activities such as camping, boating, snowmobiling, etc. Growth rates for these activities vary depending upon the scenario. For scenario 1, "Other" visitor days will increase 1.7% per year until 1995 and 2% thereafter. For Scenario 2, it is assumed that "Other" visitor days will increase 1.7% per year until 1995 and then level off.

Recreation facility development and related activities are expected to generate 317.1 man years of employment for Scenario 1, with total incomes of 9 million dollars. For Scenario 2, these activities result in 28.6 man years of employment earning .67 million dollars.

The Province will receive recreation related revenue from both Scenario 1 and Scenario 2. Total government expenditures for recreation facility development total 16.6 million dollars and 1.5 million dollars for Scenarios 1 and 2 respectively. Table 8.1 summarizes the employment, income and financial effects of the two scenarios.

TABLE 8.1
IMPACT OF RECREATION FACILITY DEVELOPMENT

	SCENARIO 1	SCENARIO 2
Total Employment	317.1	28.6
Employment Income	\$ 9.0 million	\$0.67 million
Government Expenditures	\$16.6 million	\$1.50 million

Scenario 1 provide recreation facilities with varying levels of servicing which is reflected in different per unit costs (A.F.S. campsites vs. Provincial Park campsites), while Scenario 2 provides one basic facility type. Table 8.2 indicates the maximum projected "Other" visitor days per annum, the total number of units, and the total government expenditures provided for recreation developments for both scenarios.

TABLE 8.2
FACILITY, VISITORS AND COSTS

	SCENARIO 1	SCENARIO 2
Maximum "Other" Visitor Days	120,410	81,030
Total No. of Units (Campsites and Day Use)	675	100
Government Expenditure	\$16.6 million	\$1.5 million

For Scenario 1, an approximate ten fold increase in government expenditures for Scenario 2 provides about 5 times the number of facilities for an approximate 70% increase in "Other" visitor days. However, it should be noted that the Alberta Forest Service provides basic facilities to meet regional demands, (Scenario 2), while Alberta Recreation and Parks facilities are of a higher quality and these facilities in themselves create demand.

8.1.2 Agriculture

Livestock production is the major agriculture activity in the Castle River I.R.P. area. Proposed range improvements envisioned in the Plan are expected to allow for an additional 1,120 Animal Unit Months (AUMs), which will impact 3,920 hectares of rangeland. The annual projected private gross revenue of the proposed improvements will provide \$54,600 per annum, while production costs and rental charges are expected to total \$26,940 per year. A total net income of \$27,660

per year is expected. The province would incur the range improvement cost totalling \$784,000 and receive an annual revenue of \$2,240 from rental charges. The agriculture initiative as presented in the Plan have little impact on the regional economy.

8.1.3 Timber Harvesting

The major impacts of the implementation of the Plan on timber harvesting are to remove 534 ha from the sustained yield management area of F.M.U. C3; and the addition of 1488 ha of productive timber land from the White Area to the forest land base of F.M.U. C-01. Net economic effects were not determined, however, the impact of the 534 ha reduction has a relatively insignificant effect upon the timber resource, revenues and employment. Implementation of the Plan would have little effect on the Castle River I.R.P. area timber resources.

8.1.4 Mineral Resources

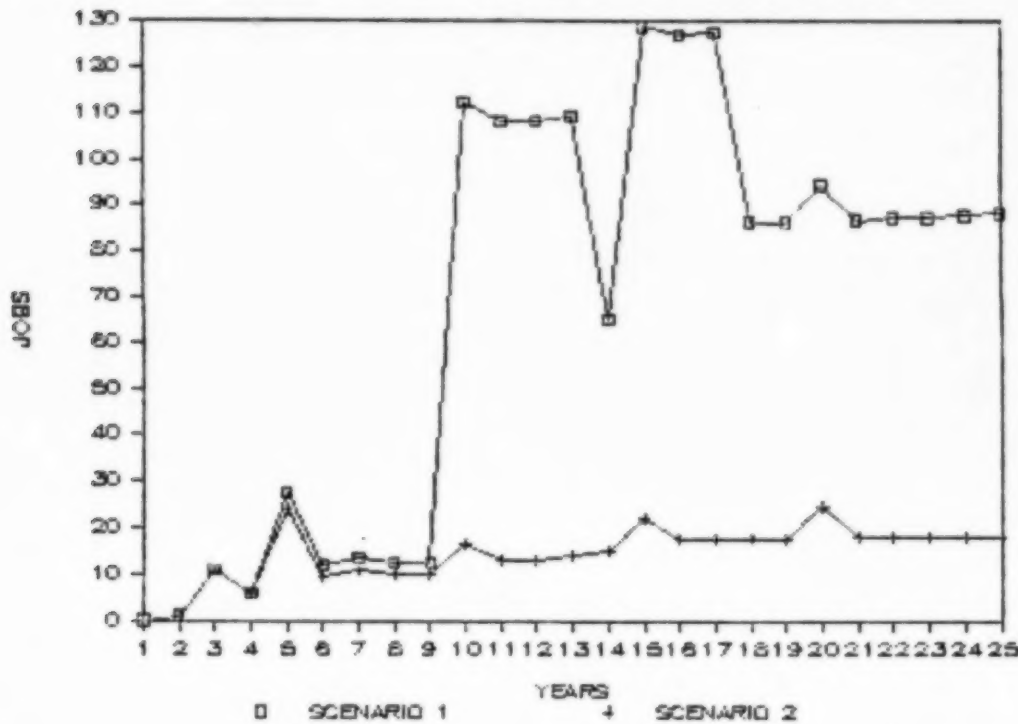
Implementation of the Plan does not result in additional restrictions on mineral resources development from those imposed by the Eastern Slopes Policy. An exception is in the Maverick Hills area where, for wildlife reasons, only underground coal will be encouraged.

8.2 Regional Effects

The Study Region used for the purpose of analysis extends beyond the planning area to include the Town of Pincher Creek and the Municipality of Crowsnest Pass (Figure 6.1). Utilizing the overall data base, an employment multiplier analysis was undertaken to estimate probable job creation under the two recreation development scenarios. An income multiplier analysis was also conducted which traced the effect of government transfers to the regional economy and the benefits of local production in order to determine the total income benefit to the Study Region.

TOTAL EMPLOYMENT CREATION

FIG. 8.4



REGIONAL INCOME GENERATION

FIG. 8.5

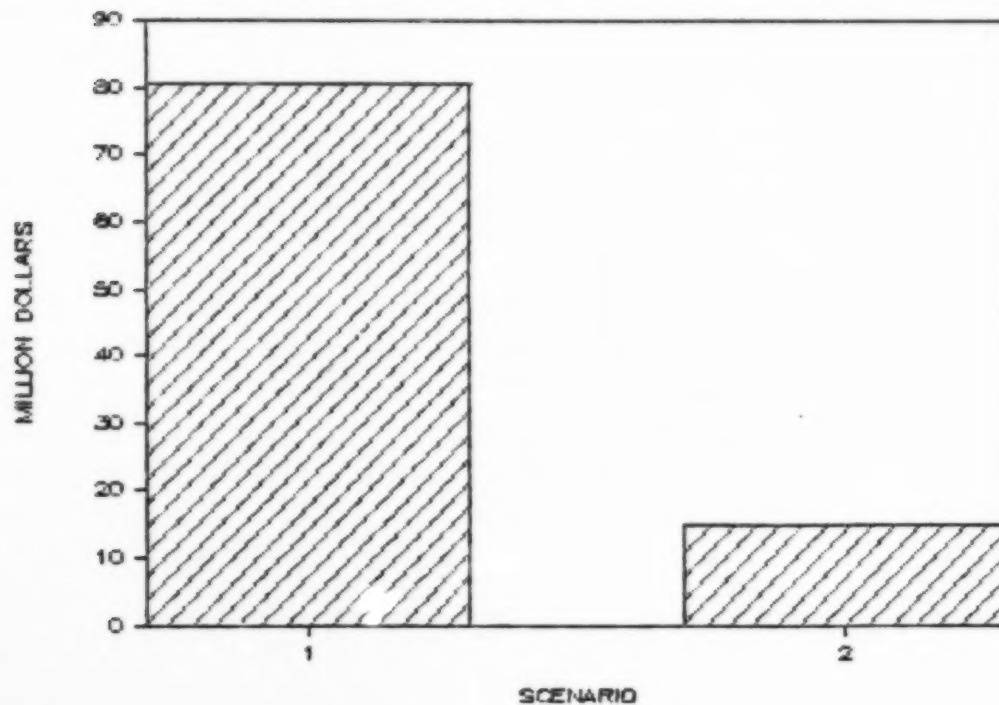


Figure 8.4 illustrates the employment likely created under each scenario. Scenario 1 provides the greatest employment opportunities, with a maximum of 129 man years of employment generated in year 15. This reflects the much larger government expenditures for recreation facility development.

Figure 8.5 indicates the total Regional income generated by each scenario. Again, Scenario 1 produces the greatest benefits to the Regional economy. From an equity perspective, Scenario 1 is preferable as it provides the greatest number of jobs for the Study Region which has a significant level of unemployment and generates the highest income levels.

8.3 Fiscal Implications

Implementation of the Plan will result only in major provincial revenues and expenditures. In order to assess the fiscal impact of the Plan, a number of direct and indirect revenue and expenditure categories were examined.

The major expenditures resulting from Plan implementation are related to the costs of developing and operating the proposed recreation facilities. The other direct expenditure categories include administration and research, and range improvements.

Implementation of the Castle River I.R.P. is expected to generate direct revenues primarily from grazing lease/permit fees and recreation user charges. Figure 8.6 shows the fiscal impacts (at net present value 5%) resulting from the scenarios. Scenario 1 has the highest level of expenditure and revenues, at 22.5 million dollars and .83 million respectively. Scenario 2 has total expenditures of 2.6 million and revenue of .26 million.

Table 8.3 shows the estimated expenditures, revenues, total number of man years of employment and total regional income resulting from each scenario.

FISCAL IMPACT

NET PRESENT VALUE 5%

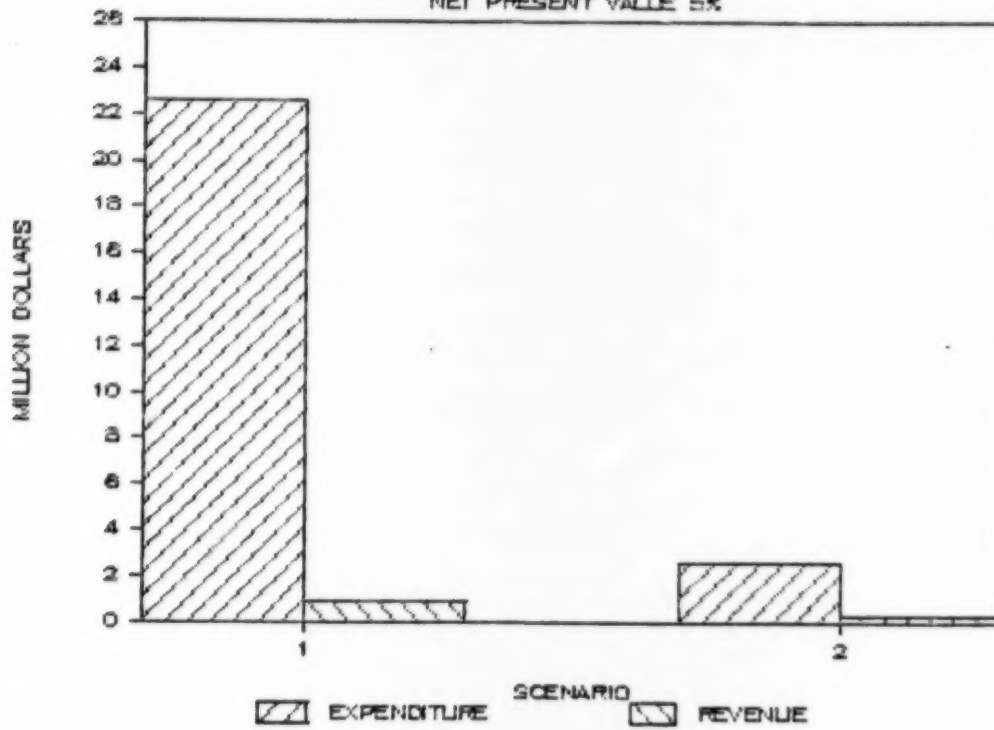


FIG. 8.6

TABLE 8.3
ESTIMATED PLAN IMPACTS

	SCENARIO 1	SCENARIO 2
Government Expenditure (NPV 5%)	\$22,559,208	\$2,574,694
Government Revenue (NPV 5%)	831,354	262,214
Total Man Years Employment	1689.5	360.5
Total Regional Income (NPV 5%)	\$34,800,180	\$6,907,507

It is apparent that Scenario 1 is preferable if equity and regional income impacts have priority. In addition, a greater number and variety of facilities are provided under this scenario. Also, more quality facilities are provided in the case of Scenario 1. This could lead to greater recreator satisfaction. However, the scenario also has the highest expenditures.

Scenario 2, on the other hand, is preferable if viewed from a cost effectiveness perspective. However, fewer facilities of a lower quality are provided and far fewer jobs are created.

A simple ranking of the scenarios is not possible as both have merit dependent upon the perspective and values of the government and citizens of Alberta. The decision makers have before them the assessment of the financial, income, employment, and demographic implications resulting from the implementation of the Castle River I.R.P. This analysis is one element to assist the decision-making process.

APPENDIX 1A - PROJECTS

ALBERTA FOREST SERVICES

<u>Project</u>	<u>Total Cost</u>	<u>Year On Project Implement- ation Sheet</u>	<u>Year On Table 7A/7B</u>	<u>Project Duration</u>	<u>Imple- menta- tion Sheet Page No.</u>
<u>Program Development</u>					
Access Management Plans			1990		1
Access Management RMA-B	20,000	1989	1990	1 mo.	3
Access Management RMA-D	10,000	1989	1990	1 mo.	5
Snowmobile Trail System RMA-A	5,000	1989	1990	6 mo.	9
Snowmobile Trail System RMA-C	<u>5,000</u>	1989	1990	6 mo.	11
	40,000				
<u>Facility Development</u>					
Reclamation RMA-A	12,500	1989	1990	1 mo.	13
Reclamation RMA-D	27,600	1989	1990	1 mo.	15
Snowmobile Staging & Trail RMA-C	50,000	1994-9	2000		29
Random Camping RMA-A, C & D	28,000	1987	1990	4 mos.	31
Off-Highway Vehicle Trail and Staging RMA-A	40,000	1992	1995	1 mo.	33
Hiking/Backpacking Trails and Trailhead RMA-B	30,000	1988-9	1990	3 mos.	35
Hiking/Backpacking Trails and Trailhead RMA-B	30,000	1988-9	1990	3 mos.	37
Equestrian Trails RMA-A	75,000	1999-2004	2005	3 mos.	39
Hiking/Backpacking Trails and Trailhead RMA-D	150,000	1989 (1/2) 1990 (1/2)	1990	3 mos.	41
Equestrian Trails and Trailheads RMA-D	75,000	1999-2004	2005	6 mos.	43
Campground RMA-C	500,000	1995+2000	1995+2000	12 mos.	45
Group Camp RMA-C	<u>75,000</u>	1999-2004	2005	3 mos.	47
	1,093,100				

ALBERTA PARKS AND RECREATION

Facility Development

Proposed Castle Provincial Park	9,701,000		1995	4 yrs.	
Proposed Beaverdam-Paine Provincial Park	4,132,000		2000	3 yrs.	
Beauvais Lake Provincial Park	1,121,000		2000	2 yrs.	
Castle River Provincial Recreation Area	177,000		1985-2005	20 yrs.	
Yarrow Creek Provincial Recreation Area	<u>50,000</u>		1990	1 yr.	
	15,181,000				

APPENDIX 1B - FACILITY DEVELOPMENT

FACILITY DEVELOPMENT

	<u>1985-1990</u>	<u>1990-1995</u>	<u>1995-2000</u>	<u>2000-2005</u>
<u>Employment</u>				
(Man Years)				
AFS	5.97 ¹⁰	3.3	4.5	5.5
P&R ⁶	<u>1.70</u>	<u>179.0</u>	<u>97.0</u>	<u>.8</u>
Total	7.67	182.3	111.5	6.3
<u>Wages</u>				
AFS	146,180	83,000	110,000	96,000
P&R ⁵	<u>51,838</u>	<u>5,359,888</u>	<u>2,913,488</u>	<u>24,338</u>
Total	198,018	5,442,888	3,023,488	120,338
<u>Materials</u>				
AFS	131,920	207,000	190,000	129,000
P&R	<u>42,412</u>	<u>4,385,362</u>	<u>2,383,762</u>	<u>19,912</u>
Total	174,332	4,592,362	2,573,762	148,912
<u>Government Expenditures</u>				
AFS	278,100	290,000	300,000	225,000
P&R	<u>94,250¹</u>	<u>9,745,250²</u>	<u>5,297,250³</u>	<u>44,250⁴</u>
Total	372,350	10,035,250	5,597,250	269,250

PROGRAM DEVELOPMENT

Employment

(Man Years)

AFS	0.3	
F&W	<u>8</u>	<u>1</u>
Total	8.3	1

Wages

AFS	6,000	
F&W	<u>200,000</u>	<u>30,000</u>
Total	206,000	30,000

Materials

AFS	34,000	
F&W	<u>111,000</u>	<u>16,200</u>
Total	145,000	16,200

Government Expenditures

AFS	40,000 ⁷	
F&W	<u>311,000⁸</u>	<u>46,200⁹</u>
Total	351,000	46,200



FOOTNOTES TO APPENDIX 1B

1. Includes the \$50,000 Yarrow Creek project plus \$44,250 for the Castle River project which has a 20 year duration, therefore, total project costs of \$177,000 have been divided evenly into the 4 periods.
2. Includes proposed Castle Provincial Park \$9,701,000 plus \$44,250 (see 1 above).
3. Includes Beaverdam - Paine \$4,132,000, Beauvais Lake \$1,121,000 plus \$44,250 (see 1 above).
4. Includes Castle River Project only at \$44,250.
5. Parks and Recreation project sheets did not include wage/materials split, therefore, it was assumed that wages were 55% total project cost.
6. Given wages determined as per footnote 5, employment was calculated on the basis of \$30,000 per job.
7. Includes access management plans and snowmobile trail plans.
8. Includes livestock, wild ungulate study, mountain goat study, access study, habitat study, fisheries inventory, fish population/harvest assessment (Chapter 2).
9. Includes Mountain Lake assessment and furbearer inventory (Chapter 2).
10. Includes .77 private sector employment generated by contracts for snowmobile trails.

APPENDIX 2

CHAPTER 6: ASSUMPTIONS

- 1 Entry in Year 4 is for water quality analysis by Alberta Environment.
- 2 Program development employment is limited to 8.3 person years in 1990 and 1.0 person years in 1995. All other employment in this category is related to facility development.
- 3 Range improvement costs were deemed to be 75% labour and 25% other inputs.
- 4 The actual employment loss is a maximum of .19 person years annually in forestry. This loss has been "liberally rounded up" to .5 so that the loss will appear on the table.
- 5 In Scenario 2, it is assumed that the decision to not develop additional recreational areas will not affect fishing and hunting user days but will affect user days for "other activities". It is assumed that user days for "other activities" will level off after 2000 (year 15) in Scenario 2.
- 6 (i) This category refers to wholesale; retail; and to a lesser extent, service employment in the Study Region related to providing materials and services needed for recreation facility construction and operations. Also included in this category is .5 of an employment position in year 3 of both Scenarios 1 and 2 related to agricultural input supply.

(ii) It is assumed that 10% of capital inputs in recreation facility/program development will be purchased in the Study Region. It is assumed that 20% of recreational operating inputs will be purchased in the Study Region. It is assumed that 80% of agricultural inputs will be purchased in the Study Region.
- 7 It is assumed that persons employed in "facility/program development" and construction will earn a mean annual wage of \$28,500 (1985 \$) per year in the case of Scenario 1 and \$24,000 (1985 \$) in the case of Scenario 2. These figures were chosen to be consistent with Chapter 7.
- 8 It is assumed that recreational operating workers will earn a mean annual wage of \$19,500 (1985 \$) per year. This figure is chosen to be consistent with Chapter 7.
- 9 Personnel employed in grazing land development are assumed to earn \$30,000 per year.
- 10 The mean net income of a rancher is assumed to be \$20,000 (1985 \$) per year.

- 11 A forestry worker is assumed to earn \$30,000 per year.
- 12 It is estimated that implementation of the Castle River I.R.P. will eliminate about half of the current annual total income from trapping of approximately \$10,000. Although Table 6.1 and 6.6 interpret this as a loss of half a job per year, more realistically it is likely that several people will be affected, each losing \$1,000 or \$2,000 in income per year.
- 13 It is assumed that private sector linked jobs in the service sector pay a wage of \$14,000 per year.
- 14 The additional RCMP officers will be required primarily to service recreators rather than the small additional regional population growth due to the plan's implementation. It is assumed that a police officer earns \$35,000 annually.
- 15 In calculating returns to capital it is assumed that each employment position in construction will generate \$200,000 in gross revenue to companies in that sector. It is assumed that retail and service positions (e.g., Servicing Recreation Users) will generate \$120,000 gross receipts per employee. It is assumed there will be no returns to capital in the trapping, agriculture-operating and agriculture-development categories. It is assumed that gross receipts in the forestry-logging category will be \$200,000 per employee.
- 16
 - (i) In calculating returns to capital in the Income Multiplier Analysis, we have not included land value appreciation.
 - (ii) Returns to capital in the private sector are assumed to be 5% of total sales (receipts).
 - (iii) It is assumed that 20% of the value of materials for recreation facility and parks development will be purchased within the study region.
 - (iv) It is assumed that 80% of range improvement inputs will be purchased in the Study Region.
 - (v) In calculating returns to capital, employment data were used to estimate incremental income to private sector enterprises in the Study Region. One exception to the above was in the case of agriculture and recreation input supply (row 12, Table 6.1 and 6.6); primary data were available to estimate sales directly in this case.
- 17 Family allowance is assumed to be \$30.00 per month per child.
- 18
 - (i) We are assuming 5% of the population in-migrating to the Study Region as a result of Plan implementation would be over 65 years of age.

- (ii) It is assumed that the Old Age Pension, Income Supplement and Canada Pension payments would average (mean) \$800.00 per month per qualifying individual.
- 19 It is assumed that 15% of in-migrant new job holders would receive U.I.C. at any given time and that monthly payments would be \$650.00 per qualifying individual.
- 20 Intergovernmental transfers to local governments are assumed to be \$60.00 per capita per year.
- 21 Entries on Table 6.15 and 6.30 were calculated for Years 2, 5, 10, 15, 20 and 25. Entries for other years are estimated based on employment creation information from Tables 6.1 and 6.16.
- 22 (i) A full time employment position is assumed to be 250 days a year.
(ii) All employment positions have been rounded to the nearest .5 job.
- 23 Private Sector recreation employment associated with servicing visitors represents only incremental jobs created after 1984 as a result of plan implementation.